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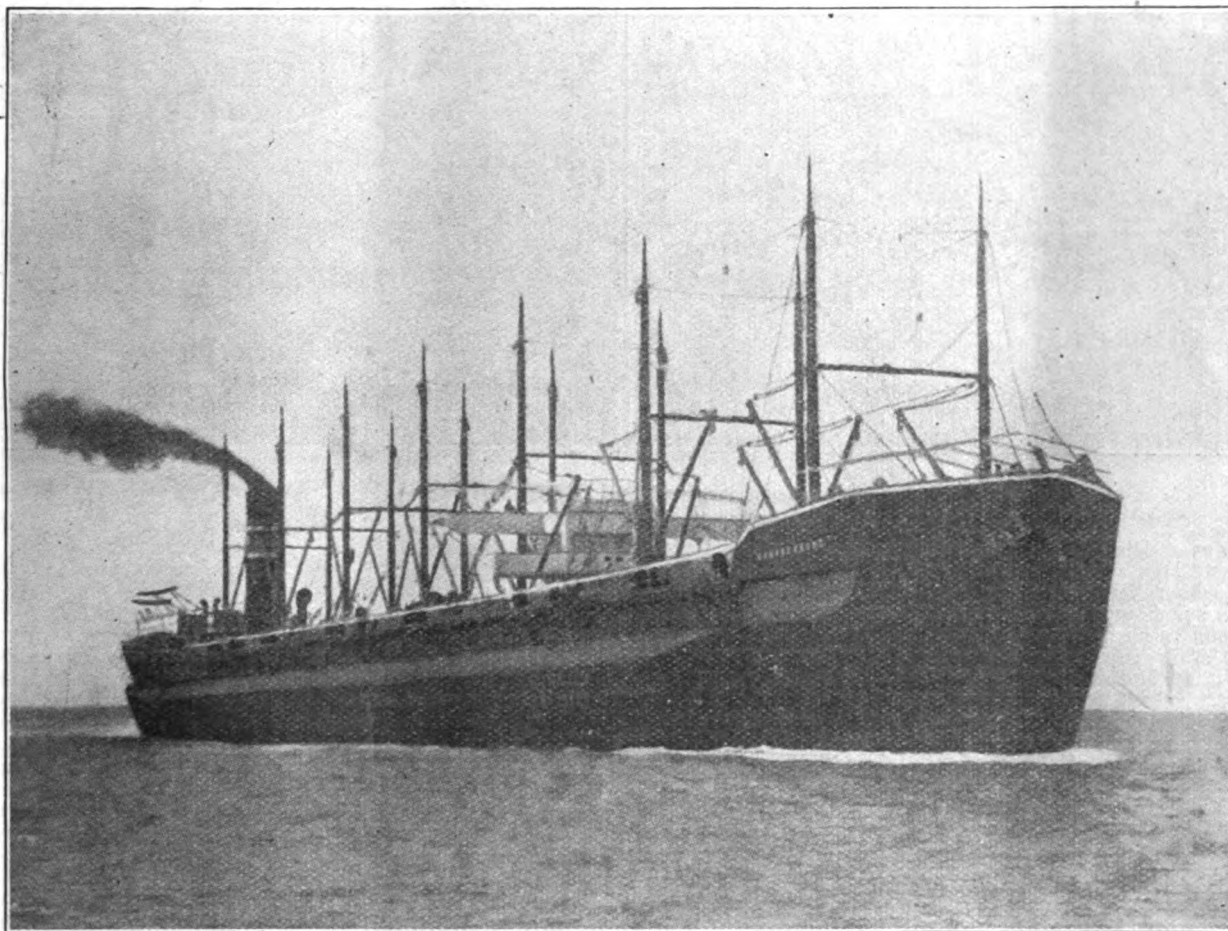
NOVEL ORE CARRIER.

Steamer Grangesberg Constructed for the Baltic Ore Trade—She Carries Her Own Discharging Gear with Her.

Ship building on the great lakes for the ore trade has reached such perfection of simplicity and economy that it is especially interesting to note the development of ore carriers in other countries. On this and succeeding pages are illustrations of a new type of ore carrier designed and built by William Doxford & Sons, Ltd., Sunderland, England, for W. H. Muller & Co. of Rotterdam for the Baltic trade. No more graphic way of describing this steamer can be conceived than the mere photograph of her. Her radical and distinguishing difference from the lake type is in the fact that she carries her own discharging apparatus with her. Her whole deck is a complicated mass of gear, whereas one might play tennis on the deck of a lake ore carrier with-

form of the upper works are concave outer gunwale and convex inner gunwale, and the main strength of the vessel is in the form of sheerstrakes and stringer plates which are fitted on the upper portion, and all the shell plates are rolled to the concave and convex form, thus enabling the whole of the upper material to take up equal stress without any buckling, which is the greatest difficulty in the ordinary flat form of deck. In the Grangesberg the natural strength is, however, supplemented by the hatchways being fitted in pairs, which enables a continuous longitudinal girder to be built at the center line of the vessel, and carried all-fore-and-aft, above which are also fitted extra central stringer plates. The advantages of the special form of this structure were readily recognized by the officials of the Bureau Veritas and the vessel was designed and built under their special survey, receiving the full classification.

The steamer is loaded by means of shore spouts which are six



Ore Carrier Grangesberg for the Baltic Ore Trade.

[Built by William Doxford & Sons, Sunderland, England.]

out any difficulty whatever. On the lakes it is the docks which carry the discharging outfit.

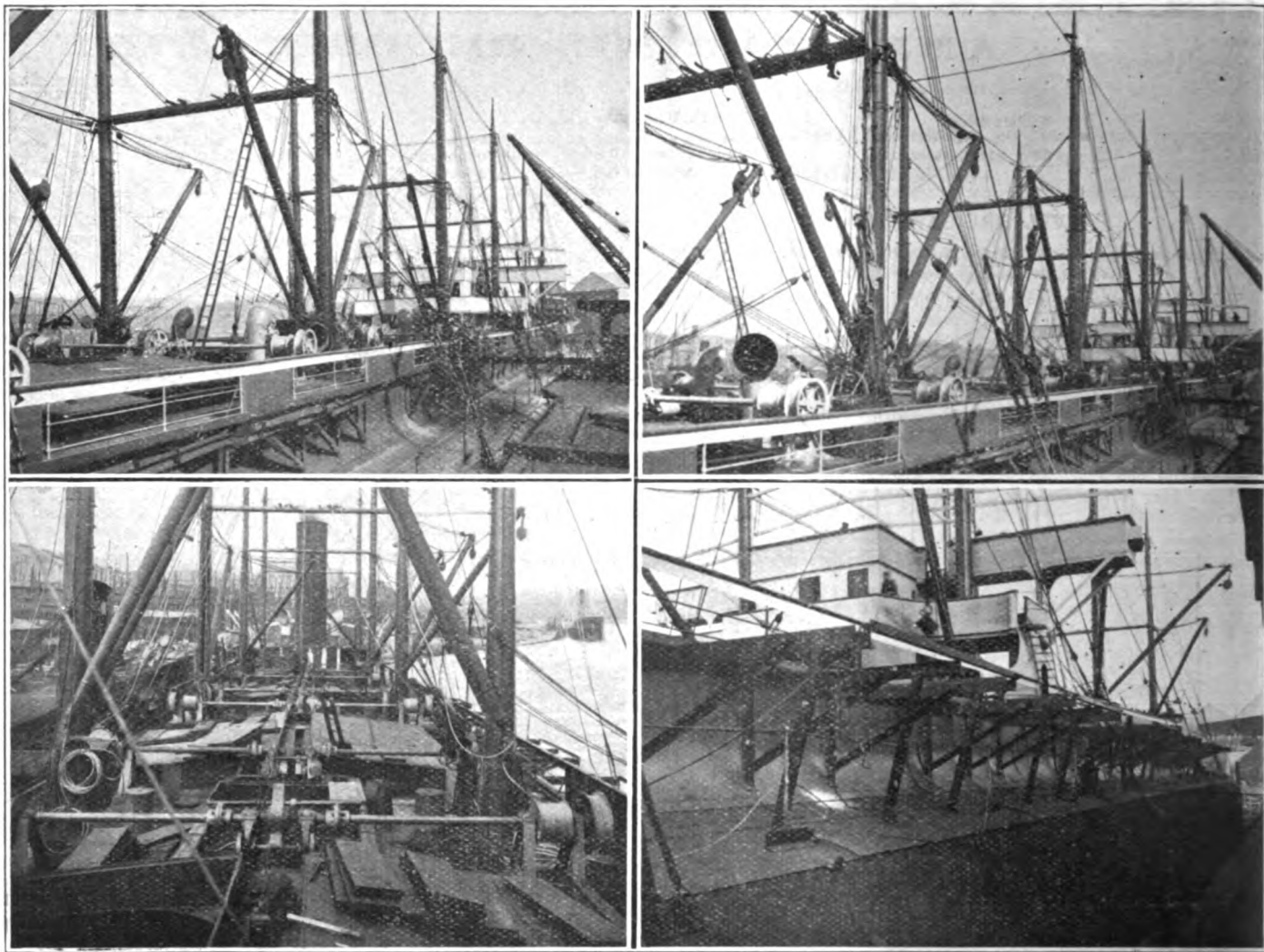
The Grangesberg is an unusual vessel in every way. She is of exceptional construction, being designed to deal with the largest cargo ever yet attempted on a draught of 22½ ft. The difficulties surrounding the design are also enhanced by the fact that the length of the vessel is limited by pier accommodations at loading station and the height of the vessel above water is limited by the loading chutes. As in the case of lake vessels the greatest advantage of length is obtained by designing the vessel with the machinery aft, which enables her to be placed with only the loading portion of the vessel abreast of the piers. These limitations resulted in the Grangesberg being designed 440 ft. long between perpendiculars, 462 ft. over all, 62 ft. beam and 29 ft. molded depth. These dimensions having been fixed the problem of obtaining the necessary strength was, of course, the primary difficulty, and it is related that construction was declined by many builders as bordering on the impossible. Doxford & Sons undertook the work on their special type of turret deck vessels which is a form lending itself naturally to great longitudinal strength. The upper portion of the vessel above the ordinary molded depth is continued upward, forming a central structure which runs fore-and-aft throughout the vessel. The combined

in number and therefore the hatchways are limited to this number; but, being divided by the longitudinal girder, previously referred to, there are formed actually twelve hatchways into the six holds, and to further subdivide the ore in falling from the chute, each of the hatchways is fitted with a special V, forming permanent division 'thwartships, resulting in the complete cargo of the vessel being divided into twenty-four heaps.

In the great lakes region the chief interest in the vessel will naturally lie in her discharging gear. The discharging conditions necessitated the vessel having complete gear on board, as she lies in open water and discharges the ore into barges on both sides. The builders say that in spite of all that has been said to the contrary experience has shown that the system of multiplicity of derricks as arranged in this vessel cannot be surpassed in dispatch. She has discharged fully 10,000 tons in 30 hours.

Ballasting such a vessel is a point of great importance and this has been satisfactorily done by supplementing the double bottom arrangement with a large fore-peak tank for balancing machinery, and a high tank in No. 3 hold, which is also arranged to carry one-sixth portion of her cargo on top of the tank, thereby raising the mean center of gravity considerably to the advantage of the vessel when loaded.

Several model experiments were undertaken before the design



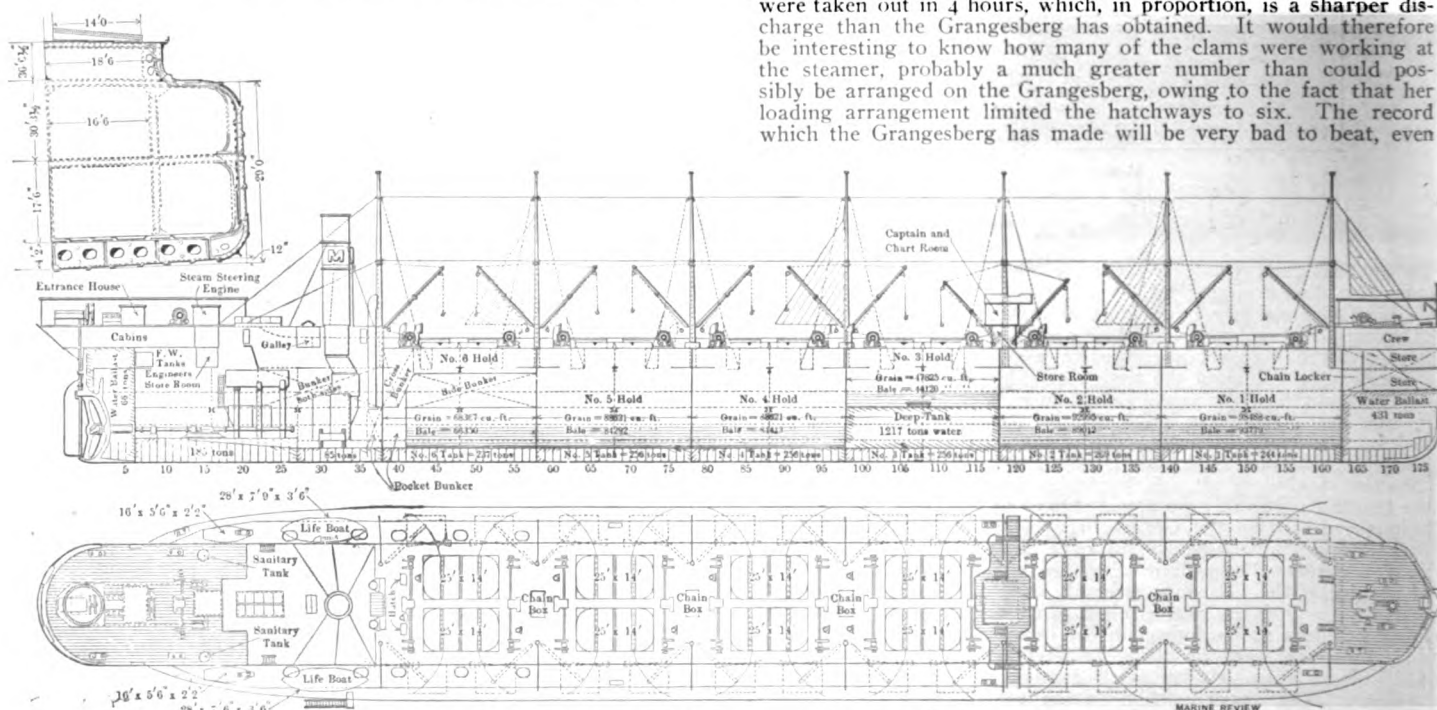
Photos Showing the Grangesberg's Discharging Apparatus.

of engines was determined upon, owing to the vessel's extreme proportions. Her engines are of 2,400 H. P., enabling her to steam 10½ knots an hour when fully loaded. To develop this power in a suitable manner the engines were fitted with cylinders of 26, 44 and 72 in. diameter with common stroke of 51 in., supplied with steam from three boilers that have a heating surface of 7,060 sq. ft. and which are fitted with Howden's system of forced draft. The steering of the vessel was also the subject of considerable investigation and the results of the arrangements fitted have been most satisfactory. Instead of the ordinary rudder the vessel is fitted with a balanced rudder, designed by the

builders, somewhat on the line of rudders fitted to ordinary government cruisers, but having a special fitting of a bottom bearing which is seen indicated in the accompanying line drawing. This kind of rudder enables the steamer to be maneuvered in very close waters with great reliability and evenness on both helms.

The builders, in commenting upon the Grangesberg's discharging ability which, as noted, is 10,000 tons in 30 hours, make the following notation:

"In the Marine Review of May 21 reference is made to an exceptionally smart piece of discharging done by the Hulett clams-hells at Conneaut where 5,000 gross tons deadweight of ore were taken out in 4 hours, which, in proportion, is a sharper discharge than the Grangesberg has obtained. It would therefore be interesting to know how many of the clams were working at the steamer, probably a much greater number than could possibly be arranged on the Grangesberg, owing to the fact that her loading arrangement limited the hatchways to six. The record which the Grangesberg has made will be very bad to beat, even



Longitudinal and Midship Sections of the Grangesberg.

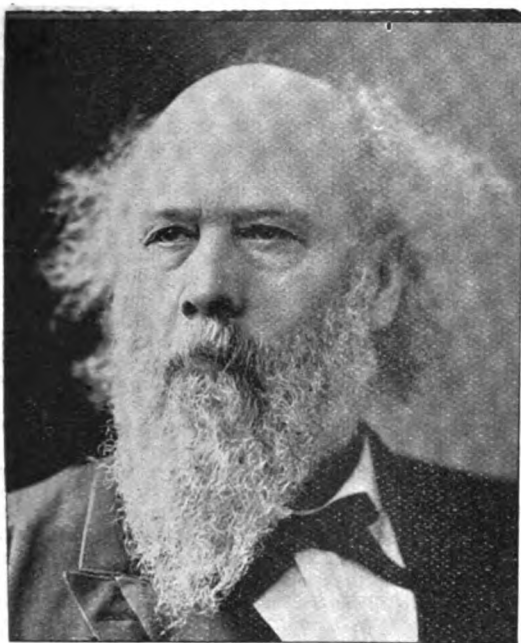
with the most Americanized fittings, and when it is known that the price paid for such a vessel, including the whole of her cargo gear and special arrangements, limited draught and high speed, is only £7.10 per ton on the deadweight carrying capacity, we are inclined to think she marks an epoch in cargo-vessel designing that will not be overtaken in our time."

Of course comparisons are unfair. The discharge of 10,000 tons from the Grangesberg in 30 hours into barges lying alongside is remarkable work; but ore handling on the great lakes is a highly specialized industry. Fifty years have been consumed in specializing it. It has developed from the wheelbarrow and gang plank for loading and the horse and pulley for unloading. Nothing more primitive can be conceived than the beginning of the ore trade on the great lake; nothing more simple can be imagined than the ease with which the enormous trade is now handled. But, as stated, fifty years have contributed to its economy. The present record of dispatch in unloading is 5,200 tons in 3 hours and 52 minutes. This amount was taken from the steamer James H. Hoyt in that time by four Hulett clamshells at Conneaut. In fact no more than four machines have ever worked in establishing the records which have marked the present year. Of course the Hoyt is especially constructed to facilitate unloading. She has twenty-one hatches, spaced 12 ft. centers. As soon as the clamshells are finished with one set of four hatches the vessel is moved until the next set of four hatches are directly under the machines. The Hoyt was the first vessel to be constructed with this extraordinary number of hatches, but a few more are now following with even more hatches. The ordinary number of hatches in a vessel of the Hoyt's length is fourteen.

The ton-cost of the Grangesberg, indeed, works out to a very low figure. During the present period of high prices the ton-cost of lake ships, measured on deadweight carrying capacity, has been about \$45.

REAR ADMIRAL MELVILLE RETIRES.

Before another issue of the Review will have come around Rear Admiral George Wallace Melville, engineer-in-chief of the navy, will have retired permanently from the navy department. Admiral Melville reached the retiring age on Jan. 10 last but his active service was extended to include the term for which he was last appointed. Admiral Melville has been essentially a worker all his life. He has helped enormously to improve the engineer-



Rear Admiral George Wallace Melville.

ing service and has devised many appliances of proved value in warship construction. He was chief of the bureau of steam engineering for twelve years, during which the navy has been practically re-created.

He is a son of Alexander Melville and Sarah Doucher Wallace. He was born Jan. 10, 1841, in New York city. He was educated in the public schools of that city and later, displaying marked mechanical instincts, passed through the Polytechnic school of Brooklyn and received a further course in mathematics in a religious academy of the same city. At the end of his school days he entered the engineering works of James Binn of East Brooklyn, where, broadly and deeply, he laid the foundation of that practical skill which served him well later.

On July 29, 1861, he became an officer of the engineer corps of the United States navy. Although a junior officer Melville saw much active service during the war. He was for a brief period on the side-wheel steamer Michigan, cruising on the great lakes, and was later transferred to the screw sloop of war Dakota of the North Atlantic fleet. With her he served during the shelling of Lambert's Point and the capture of Norfolk, Va., she acting as guardship during the night and morning of the destruc-

tion of the Merrimac off Craney Island, Norfolk harbor. He was with the fleet that cleared the James river in Virginia as far as Fort Darling, Drury's bluffs. Later he was attached to the fast side-wheel steamer Santiago de Cuba, the Tonawanda, and the screw sloop Wachusett. He was on the Wachusett when she rammed and captured the confederate cruiser Florida in the port of Bahia, Brazil.

When the war was ended Melville was ordered to the Tacony and with her served in the Mexican gulf during the French occupation and evacuation of Mexico. Later he joined the gunboat Penobscot; then cruised to Brazil in the flagship Lancaster; then to the arctic in the steamer Tigress; then to China and Japan in the flagship Tennessee; again to the arctic in the steamer Jeanette, and yet again in the Thetis for the relief of the Greeley expedition. The latter duty with a short term on the Atlanta closed his service afloat. He has been for the past twelve years engineer-in-chief of the navy. He has been honored by so many societies for his distinguished services to engineering that it would be tedious to catalogue the list.

THE 13,000-TON BATTLESHIPS AGAIN.

As was noted in the last issue of the Review Rear Admirals Melville and Bradford are opposed to the design of the 13,000-ton battleships Idaho and Mississippi on the ground that they are deficient in coal supply and in radius of action to previously designed battleships. Rear Admiral Bowles, chief constructor of the navy, who is principally responsible for the design, has replied to them, saying:

"In connection with the preparation of the designs careful estimates were made of the radius of action of the principal types of United States battleships built and building, based upon the actual returns of coal expended as compiled from United States steam logs in the bureau of steam engineering. The results of this investigation indicated the number of miles each vessel can steam, starting with full bunkers, at all speeds from 4 to 15 knots. The following table shows the distances at rates of 8, 10 and 13 knots:

	8 knots.	10 knots.	13 knots.
Virginia	3,720	3,820	3,530
Alabama	4,320	4,200	3,500
Maine	4,840	4,900	4,470
Massachusetts	5,050	4,780	4,000
Connecticut	5,270	5,280	4,680
Kearsarge	5,460	5,320	4,070
Idaho	6,000	5,770	4,800

"The design of the modified Maine advocated by Rear Admiral Bradford was intended to duplicate the Maine's design in all matters except the disposition of armor and armament, the total weights of the two being the same. This design would, therefore, have the same coal capacity as the present Maine, namely, 1,800 tons on the basis of stowage used in these tables. They show that at 8 knots the Idaho, with 1,750 tons of coal, steams 1,160 miles farther than the Maine, at 10 knots 870 farther, and at 13 knots 330 farther. As a matter of fact the Idaho will have greater coal endurance at all cruising speeds than any vessel yet designed. The Idaho's great endurance is due to the use of a model adapted to moderate speeds and a consequent low total engine power, both of which reduce the coal burned per mile run."

Rear Admiral O'Neil says: "I have expressed my views on the subject and am prepared to stand by them. If a so-called 'improved Maine,' carrying four 12-in. and fourteen 7-in. guns, is equal in fighting efficiency to a vessel carrying four 12-in., eight 8-in. and ten 7-in. guns, superior gun power is of no value. I do not think our battleships should be given speed for the purpose of running away, and the 13,000-ton ships proposed by the board would not have to run away from the 16,000-ton ships, supposing them to belong to an enemy, as the latter carry but two 7-in. guns more than the former, their batteries being equal in other respects, and a vessel so nearly equal in gun power could well afford to try conclusions with the larger ship. All United States vessels are more heavily armed—type for type—than foreign ships, and I am confident that none of our ships will have to run away from any foreign vessel of similar class. From my point of view, I consider the superposed turret a dead issue. I never expect to see any more vessels built which include such features, and I think it a misfortune that the Virginia class are to carry them. I have always been opposed to the superposed turret as unimilitary and as a thoroughly bad form of construction. Admirals Bradford, Melville and myself are warm friends, and I have great respect for their judgment on professional matters, but we often agree to disagree, and disagreement leads to careful investigation and wholesome discussions. I must say, however, that the so-called 'improved Maine' does not impress me favorably, as compared with the design submitted by the board."

The bureau of statistics, department of commerce, endeavors to collect, through a system of supplementary manifests from vessel masters, statistics of lake commerce as a whole. The latest report from the bureau on this score is as follows: "On the great lakes the tonnage of coastwise traffic shipped from ports reporting to the end of June this year has totaled 20,113,227 tons, compared with \$19,439,458 tons in 1902, and 12,621,977 tons in 1901. Coal tonnage for the half year amounted to 7,833,809 tons, of which 5,500,936 was shipped to domestic ports and 2,332,873 tons to foreign points. The registered tonnage for six months this year in the domestic trade of the lakes reached 25,570,757 net tons compared with 25,342,698 net tons in 1902."

GLASGOW SHIPPING LETTER.

Wage Question in Ship Yards Again Nearing a very Interesting Stage—Another Experimental Tank—Report of the Anchor Line, etc., etc.

Glasgow, July 27.—No new contracts for ships seem to have been booked this month and I doubt if much will be done in August either. With the first of August expire the terms for which the recent wage reductions were made with the ship yard men and the machinists. The Amalgamated Society of Engineers has already applied for a resumption of the adjourned conference between the Scotch and North of England Associations of Employers and the trade union representatives which made the temporary compact three months ago. No doubt the Amalgamated Society of Engineers men will claim the return of the reduction then made, on the ground of the demand for machinists in other branches of engineering, whilst the marine employers want, if possible, another reduction in order to cheapen ship production. There will likely be a long controversy but how it will end one cannot foresee at present. The ship yard workers have not yet made any move, doubtless because the officials, like the rank and file of the trade unions, are taking holiday just now, but they and the ship building employers will have to face each other very soon on the wages question. No one can dispute the declining work in the ship yards, and order books speak for themselves as to the future. Ship yard hands have not, at least with very few exceptions, the alternative employments that machinists can sometimes seek (and at present find) when marine engineering is dull. The wage question is nearing a very interesting stage.

Not all ship builders have had short commons during the past year, notwithstanding the complaints. Among those who have done well have been those well-known liner yacht builders, David & William Henderson & Co., Ltd., Glasgow. Their report states that the results of the year ended April 30 last have been satisfactory. The profit, after charging the cost of renewals and upkeep, amounts to £40,058, to which falls to be added a balance brought forward from last account, £14,616, giving £54,674, which the directors propose to appropriate as follows: In providing for depreciation at the rate of 2½ per cent. on buildings and 5 per cent. on machinery, £5,611; in providing for the interim dividend paid on preference shares, £7,500; in providing for a final dividend on the preference shares, £7,500; in paying a dividend of 10 per cent. per annum on the ordinary shares, £22,500; leaving to be carried forward to next year, £17,563.

A new shipping combine is about to take place by the amalgamation of the two extensive shipping concerns of Messrs. Bailey & Leatham and Thomas Wilson Sons & Co., owners of the Wilson Line. Henceforth these two extensive businesses will be worked as one. The normal value of Wilson & Co.'s business, which a few years ago was converted into a limited company, is £2,000,000, but the shares were not placed upon the market. Their steamers number eighty-two and the gross tonnage is 170,000. Messrs. Bailey & Leatham own twenty-three steamers and their capital is £500,000. Both firms have offices in London and Newcastle. Both trade regularly between Liverpool and the Continent, whilst Wilson & Co. also run vessels between London and New York.

ANOTHER EXPERIMENTAL TANK.

A good deal of consideration is being given in ship building circles just now to the subject of experimental tanks, in which the Clyde has led the way. The experimental tank is a most useful adjunct of all modern ship building establishments, and two of them are in operation in Clyde yards. One of these is the famous tank of Messrs. Wm. Denny & Bros. at Dumbarton, and another has just been constructed after a somewhat similar pattern at the yard of John Brown & Co., Ltd., Clydebank. The new tank is substantially built and carefully roofed in. There is a free run for model trials of 400 ft., the width of the tank being 20 ft., and the depth of water 10 ft. The main frame spans the width of the tank and carries the truck to which the model is harnessed, together with operators and recording apparatus. The water was let into the basin some time ago and the company is now able to experiment with models in their own establishment. Your Admiral Melville is emphatic on the great importance of more money and attention being devoted to experimental work in connection with the navy. In America, as in Britain, such experimental work has been desultory, and many untried and doubtful devices and expedients have doubtless been adopted which would have been better avoided. One of the problems for solution has reference to the question of the efficiency of inturning screws. These, it is contended, are detrimental to maneuvering. The reason for the adoption of the system is that with them the twin engines can be so placed in the ship that the starting platform for both is in the center, so that the chief engineer has full control over the valves, etc. But in twin-screw steamers for merchant service this result is achieved in combination with out-turning engines. There are problems associated with the strength of columns in the front of the engine, with valves, propellers, the strength of shafts, the packing and material of bearings, the composition of white metals, the jacketing of cylinders, the influence of short strokes, etc., enough to keep a large experimental staff in operation. An increase of speed in some recent cruisers of 1½ to 2 knots simply by change of propeller suggests that power is being wasted in warships, as well as in high-speed passenger boats, because of the want of more scientific methods. As Admiral Melville has pointed out, Germany's excellence is not the result of a progressive series of failures, but rather a high appreciation of the value of experimental work and investigation.

The report of the directors of the Anchor Line (Henderson Bros.) for the year ended April 30, 1903, states that during the year the Massilia was delivered by the builders to the company and the Circassia has subsequently been delivered. Both vessels have given the utmost satisfaction, and will prove valuable additions to the fleet. The Italia (building by David & William Henderson & Co., Ltd., for the Mediterranean and New York passenger service) is expected to be launched towards the end of the present year. The Hispania has been sold, having been taken in part payment for the Italia. Throughout the year, they say, the freight market generally has been in an exceptionally depressed condition; and in the Atlantic trade especially rates have been little more than nominal, and only part cargoes have been in many cases obtainable. The passenger branch of the business has, however, been well maintained, and the numbers carried in all the services has exceeded those of any year since the formation of the company. The profits for the year ended April 30, 1903, after charging all expenses, amounted to £80,046, to which has to be added a balance brought forward from April 30, 1902, £34,528, total £124,474, out of which there has been written off for depreciation £60,000, and there has been paid debenture interest, less income tax, £13,710 and dividend on preference shares, less income tax, £10,757, leaving a balance of £34,007. This the directors recommend should be applied as follows: To payment of a dividend on the ordinary shares at the rate of 5 per cent., free of income tax, £12,500; leaving a balance to carry forward to next year of £21,500.

EXTRAORDINARY SPEED OF THE DONEGAL.

Some extraordinary speed results have been obtained by the first-class armored cruiser Donegal, built by the Fairfield Ship Building & Engineering Co., Ltd., for the British admiralty, on the trials stipulated in the contract. It has been hitherto the custom in carrying out the speed trials of warships that afterwards the guns and mountings were put on board at one of the government dock yards, but the admiralty now orders the vessels to be completed by the contractor. The Donegal is the first cruiser to go out from a contractor's works fully equipped with guns, torpedoes, etc. The series of trials laid down by the admiralty for the Donegal included steam trials at various powers, gun and torpedo trials, circle turning, steering engine and anchor trials—all carried out with very satisfactory results. A trial which has given some difficulty in other vessels of the class was that of bringing the rudder back from the hard-over position to the middle line when steaming at 17 knots astern. Other ships have to slow down the propelling engines by ten or twelve revolutions to accomplish this, but in the Donegal this severe test of the steering machinery was carried out without difficulty at a speed corresponding to 104 revolutions astern. During the voyage to Devonport the steam trial of 30 hours at one-fifth power was completed. The average speed even at this low proportion of the power of the vessel was 14.75 knots. On arrival at Devonport the ship was taken out to the Channel when the various gunnery tests were made and the specified rounds were fired from all the guns, and everything was found satisfactory. During the firing of the large 6-in. twin mountings the ship was perfectly steady. The official tests of the torpedo gear were carried out with equal success. The ship was afterwards prepared for the return voyage to the Clyde, during which the 30-hours' trial at three-fourths power was carried out. The mean speed during this trial was 22.3 knots, which exceeds anything hitherto done on a similar trial of any cruiser. An early start was made on the full-power trial of 8 hours' duration, and the result of this trial is now recorded. On the measured mile at Skelmorlie, while running at the contract horse power—22,000—the mean speed of four runs was 23.73 knots, being the greatest speed yet attained by any vessel of the class; and, proceeding out to sea for the stipulated 8 hours' trial, the indicated horse power developed was 22,154. The following is a statement of the results of the official steam trials of the Donegal: One-fifth power, 407 I. H. P., 88.8 revolutions, 14.75 speed; three-fourths power, 16,333 I. H. P., 136.4 revolutions, 22.30 speed; full-power, 22,154 I. H. P., 146.8 revolutions, 23.73 speed.

PACIFIC MAIL STEAMSHIP CO.'S REPORT.

The annual report of the Pacific Mail Steamship Co., of which E. H. Harriman is president, was made public last week. The report shows that after making the customary charges for depreciation and for general and extraordinary repairs of steamers, amounting to \$314,823.20, the year's operations have resulted in a surplus of \$8,280.33, against a deficit of \$307,935.29 in the preceding year. Compared with the operations of 1902 the receipts from steamers operated and chartered increased \$704,500.16, and the receipts from other sources \$3,600.23, a total increase of \$708,100.39. There was a shrinkage in the company's earnings in 1902, the report says, from an unusual combination of unfavorable circumstances. The earthquake in Guatemala unsettled business in that republic for a considerable time, a quarantine existed at some of the Mexican ports, the low price of silver reduced the exports to all countries on a silver basis, and some business was diverted by the low rates made by the Suez canal lines. Since Sept. 30, 1902, the company has put into service the new steamships Korea and Siberia, at a total cost of \$3,979,114.37. The cash on hand in New York, San Francisco and London April 30 last amounted to \$56,414.36.

DELAWARE RIVER SHIP BUILDING ITEMS.

Philadelphia, Aug. 5.—The American liner *St. Louis*, which was very much in need of a general overhauling, especially as to boilers and engines, and which has been at the Cramp ship yard since January last, when her leaky boilers caused serious delay in a trip across the Atlantic, has completed repairs and has gone to Newport News to be docked. After docking she will proceed to New York to go into service on the New York-Southampton route, making her first sailing August 19. She will be commanded by Capt. J. C. Jamison, now in command of the *St. Paul*. Capt. Passow, who commanded the *St. Louis* when she broke down last winter, will remain on the New York.

President S. W. Halton of the Maritime Exchange, has notified the committee of arrangements for the celebration of the launching of the cruiser *Pennsylvania*, that the members of the exchange will participate in the event. Extensive arrangements are being made for the launch, which, according to present plans is to take place Aug. 22 at high tide. National and state officials will be present and wharves and piers up and down the river are to be suitably decorated.

The whaleback tank steamer *City of Everett*, which has been at the Cramp works for two months undergoing extensive repairs, left Saturday and will carry oil between New York and Philadelphia. The steamer *Baku Stannard*, with her bows stove in from collision with an iceberg, reached the yards a day or two ago and will undergo repairs.

It has been decided that no celebration will attend the laying of the keel of the cruiser *Washington* at the works of the New York Ship Building Co. at Camden. Referring to work already done, Secretary and Treasurer Knox said: "The keel blocks of the cruiser have been laid for some time. We had to wait until the *Mongolia* was launched before we could continue the work. Within the past few days some additional preparatory work has been done. The keel can't be laid in a day. It must be put together piece by piece. It would be difficult to decide upon what particular plate to have ceremonies. The first plates of the keel will be laid within the next two weeks."

Among visitors at the New York company's yards last week were Henry C. Frick, the Pittsburg steel magnate, and Philander C. Knox, attorney-general of the United States. Their visit was purely informal and had no unusual significance. Work on the steamer *Manchuria*, of the 625-ft. class, is being pushed vigorously at these works and the construction of the new "steel pickling" addition to the machine building is far along toward completion.

The torpedo boat destroyer *Hopkins* left the Harlan & Hollingsworth works, Wilmington, Saturday, for the course on Chesapeake bay, where the government trial trip will be made this week. The steel auxiliary yacht *Vergemere*, launched at Harlan & Hollingsworth yard a few days ago, is a very handsome craft. She was built after plans of Smith & Barbey for A. C. Bostwick of Boston, who is a prominent member of the New York Yacht Club. Her dimensions are: Length, 162 ft.; on water line, 120 ft.; 28 ft. breadth of beam. Her engines are of course small, developing about 175 H. P. Steam is supplied by an Almy water tube boiler. She is schooner rigged with telescope funnels. The deck is of teak and the finish mahogany.

Henry Behrens, Jr., has purchased 300 acres of land on the Delaware river front, near Pea Shore, East Camden, and has started the work of erecting a boat building plant. He will construct and repair barges, and, business warranting it, will enlarge the plant so as to build other vessels of a larger type.

The Southwark Foundry & Machine Co. will add a new building to its already large plant. The new building will be used as a smith pattern shop and storage room; will be five stories in height and in dimensions 58½ by 100 ft. The walls will be mainly of expanded metal and cement. The Southwark company's plant is very busy and has recently turned out a number of unusually heavy engine and machine castings.

Peter Hagen & Co., East Camden ship builders, have started the construction of a marine railway at their works at the foot of Twenty-Sixth street. It is the intention of the company to use the marine railway as an adjunct to its present dry dock, work having increased so fast that their present facilities are inadequate. The material for the railway is being unloaded and work upon it is to be steadily prosecuted.

The Thomas H. Dallett Co. was recently reorganized and will greatly enlarge its works at York street and Sedgley avenue. The company will continue manufacturing drills, deck-planers, etc., and will go very extensively into the making of Dallett pneumatic tools.

The Nilson Yacht Building Co. of Ferry Bay, Md., has a contract to build a 100-ft. house boat for Henry Payne Whitney. The boat will have twin screws and gasoline engines and is designed for pleasure in Florida waters.

The new Ericsson Line steamer *Penn*, was pretty badly damaged by fire on her first trip to Baltimore and had to be taken to the Harlan & Hollingsworth yards for repairs. Sparks from the smokestacks set fire to the boat's upper awnings and wood-work.

Ex-Senator James Smith, Jr., has been served with summons in the suit begun in the United States district court of Maine by the Mercantile Trust Co. of New York for the foreclosure of the \$16,000,000 mortgage on the plants of the United States Ship Building Co. The writ is returnable in Portland, Me., on Sept. 17.

LEAGUE ISLAND NAVY YARD.

Philadelphia, Aug. 5.—The work of constructing the new dry dock at League island is being steadily pushed by the Scofield Contracting Co. of Pittsburg, and progress made has been very satisfactory. Thousands of piles are being driven in the bottom of the immense excavation to form the foundation of the dock. When completed, which will be in the spring of 1905, the dock will easily accommodate the largest vessel afloat.

Representative Dayton of West Virginia, a leading member of the naval affairs committee, and who visited the Atlantic coast yards recently, is outspoken in his views concerning the League Island yard. "The League Island yard," said he, "comes nearest to being what it should be. Many of the other government yards are overcrowded and lack the facilities for doing the work they ought to be able to do." He further said that in his opinion the government should abandon all of the government yards but two, or perhaps three, and devote its money and energy to developing and completing these two or three, one of which he thinks ought to be League Island.

Captain Charles D. Sigsbee, present commandant of the yard, heartily favors having improvements made. "Before I came to League Island," he said, "I had not thought of it as a yard of great importance, but after I had been established here for a short time and became aware of the conditions surrounding it, I came to the conclusion that League Island is destined in time to become one of our greatest navy yards. I so expressed myself to the navy committee which recently visited the yard and I have made the same statement to the navy department. League Island has two great advantages—it is centrally located and the government already owns sufficient land on which to build and develop a greater yard. There are sufficient funds to complete the improvements now being made, and it is probable that more money will be appropriated. Little is now needed about the yard to enable us to execute any order that may be given, even to the building of a vessel of war. If the private ship yards had all they could do in building merchant vessels, the building of warships would naturally come to this yard, as I think it will in time.

"League Island is well equipped for ship building. There is plenty of room here, and good foundations upon which to build any kind of a structure. We are near the great railroads and the sea, have skilled labor at hand, and are close to supplies of material. So far as I can see League Island and its surroundings are well adapted to all naval purposes."

FAVORS PRIVATE YARDS FOR WARSHIPS.

A continuation of the building program of the navy seems assured, so far as the house committee on naval affairs is concerned, as a result of the recent trip of the committee to the navy yards and private ship yards along the Atlantic coast. Representative A. G. Dayton, the ranking member of the committee, in an interview in Washington on Saturday last declared that personally he believed that the private yards are capable of taking care of all the ships which congress might authorize at the coming session. His colleagues on the committee, he believes, are also convinced of that fact. He says there are vacant berths at the yards of the Newport News Ship Building & Dry Dock Co. of Newport News, Va., the New York Ship Building Co. of Camden, N. J., and at Cramps, Philadelphia. These companies, he declares, could all take additional work to the amount of two or three times what is likely to be authorized by congress. Mr. Dayton is an enthusiastic believer in a continuing program of naval construction. While such a program has, in reality, been carried on for the last few years it has only been because the advocates of the "larger navy" have succeeded against strong opposition in having their ideas adopted. To adopt a permanent program with the understanding that a certain number of ships were to be authorized each year, would obviate the legislative battle over each bill in congress. Mr. Dayton announces that he will advocate the adoption of such a program at the coming session of congress as he has in the past.

While the private yards created a satisfactory impression on the committee, there is considerable criticism of the government yards. Mr. Dayton declares that not one of the navy yards along the Atlantic coast has adequate room to grow, that money appropriated years ago for their improvement has not yet been spent and that the greatest delay in constructing buildings and making other improvements is in evidence.

"The yards at Boston, Brooklyn and Norfolk," Mr. Dayton said, "were established when the United States navy was small and insignificant and the horizon of the legislative mind was narrowed as to the future need of the navy. The result was that in every instance there was a complete failure to buy sufficient water front on which to build up a great naval plant, such as has been authorized and is necessary for the proper care of the navy. Norfolk must necessarily have more water front unless that yard is to be crippled, and crippled very seriously, in its future work. At Brooklyn the navy yard is just like a thin shell. Every inch of it is occupied, and the great problem is how we can get additional ships and room for the work going on there every day. The same condition is found at Boston. The nearest approach to an ideal yard is at League island, where we have a beautiful harbor, but the channel requires a great deal of dredging. In every one of these yards the committee found that there had been great delay on the part of contractors in erecting the buildings authorized, and that our appropriations were away ahead of the work actually done."



ORE SHIPMENTS ARE SHORT 647,576 TONS.

The iron ore shipments from all upper-lake ports to Aug. 1 of the present year are 12,328,643 gross tons, as against 12,973,219 tons to Aug. 1, 1902, a decrease for 1903 of 647,576 tons. The July shipments show an increase of 14,328 tons, being 4,087,714 tons, as against 4,073,386 tons for 1902. Notwithstanding the slight increase for the past month, it is not now expected by those close to the trade that this season's movement of ore will fully equal that of 1902, when 27,571,121 tons were shipped. The conditions of docks and furnaces is not such as to warrant the movement of so great a volume of ore. The demand for vessels, however, is still fully equal to the supply, as delays in port are as bad as ever. Grain continues in a state of famine as far as cargoes are concerned and the package freight business is unusually dull. Still it is significant that one manager who has a fleet of steel steamers contracted for ore during the season is offering part of it to be moved in September and is reported to be anxious to unload all the ore that he has for delivery later in the season. He is close to the grain trade and it is surmised that he wants to be free to carry grain later. Meanwhile rates are as they have been for some weeks past.

Two Harbors, the leading port, shipped in July 876,970 gross tons, loaded into 181 vessels. The average cargo was 4,845 tons and the average time loading 6 hours.

DULUTH VIEW OF THE OUTLOOK FOR LAKE VESSELS.

Duluth, Minn., Aug. 5.—Iron ore traffic from the head of Lake Superior is still very heavy, and the Steel Corporation reports that its shipments are quite satisfactory. A good deal of interest is manifested in outside shipping circles as to the intentions of the big organization, as the profits of the year depend very much on what the Corporation may do. It is known that the Corporation hauled down the lakes a great deal more ore than was required for melting during the year ended with May, 1903. Indeed it was generally recognized last fall that stocks of ore on receiving docks were sufficient to last well toward this midsummer. This being the case, a movement of ore this year correspondingly in surplus to the Corporation's increased melting capacity could scarcely be expected. Still its shipments this year are heavier than last. Will it be through early or will it again increase the stockpits at lower lakes? In the one case enough tonnage will be thrown on the general market in the fall to create complete collapse; in the other there will be a fair finish to the season as the coal and grain movement will continue until quite late.

As an indication of the way some independent vessel owners feel about the future—not this year nor next, but for the long pull—it may be noted that they are actually looking to the purchase of ore mines in the Mesabi country that they can depend on to give them tonnage, the mining and selling of the ore being a side consideration, with tonnage the main factor. No sales of ore properties on this basis have yet taken place, but that inquiries are being made is well known.

DULUTH-SUPERIOR CROP YEAR.

Duluth, Minn., Aug. 5.—The crop year, ended with July, shows for Duluth-Superior receipts of 66,205,796 bu. of grain of all kinds and shipments of 61,070,796 bu., compared with receipts of 61,286,000 bu. for the previous year and shipments of 57,198,000. There is a decrease of wheat and an increase almost corresponding thereto of flax, barley and oats. Receipts of Canadian wheat this year showed a decrease of about 6,500,000 bu. The amounts of the different grains were:

	Receipts.	Shipments.
Wheat, bu.	36,961,000	33,888,000
Flax, bu.	19,148,000	17,167,000
Barley, bu.	5,957,000	5,941,000
Oats, bu.	3,255,000	3,213,000
Rye, bu.	883,000	860,000
Corn, bu.	1,796	1,796

Total	66,205,796	61,070,796
Total 1901-02	61,286,000	57,198,000
Total 1900-01	38,987,000	39,782,000

There is now in store in head of the lakes elevators less wheat than has been known here since Duluth became an important shipping center, the total being but 275,000 bu. On the other hand there was never so much flax at the end of a crop as now, 2,000,000 bu. There is not enough wheat to make a single cargo and the matter of lake freights is merely a nominal consideration.

Lake shipments of flour were large last week, but are not improving materially and will be less for the season than in many

years. Most lines report their traffic about cut in two. Room formerly taken by wheat is given up to grain in bulk or to Pacific coast shingles, fish and other commodities, and the number of package freight steamers in this route is less than usual.

NEARING THE 10,000-TON MARK.

During the present high stage of water cargo records of the lakes are being broken almost daily. The William Edenborn of the Steel Corporation's fleet on Saturday last smashed her own record, and of course all other records besides, in moving from Escanaba to South Chicago 8,807 gross tons or 9,864 net tons of iron ore. With this cargo she drew 20 ft. 9 in. aft and 20 ft. 5 in. forward. She met a temporary delay in touching bottom when she reached the harbor at South Chicago but a few hours wait for high water caused her to deliver her cargo in safety to the dock. This record is 974 gross tons greater than her previous record when on July 25 she loaded 7,833 gross or 8,773 net tons at Ashland for Conneaut. Of course the run between Escanaba and South Chicago permits of much greater draught than prevail in Lake Superior trade. The increase in carrying capacity on account of high water is running nearly 10 per cent. for all ships which can load down to the limit. Large cargoes of hard coal are common though none of them are record breakers. The big freighter Moses Taylor, owned by Mitchell & Co. of Cleveland, recently took 7,073 net tons of hard coal out of Buffalo, which is within 615 tons of the record cargo of the Isaac L. Ellwood for hard coal. Following are the cargo records to date:

Iron Ore—Steamer Wm. Edenborn, owned by Pittsburgh Steamship Co., A. B. Wolvin of Duluth, manager, 8,807 gross or 9,864 net tons, Escanaba to South Chicago.

Grain—Steamer S. J. Murphy, Donora Mining Co., Duluth, 260,000 bushels of corn, equal to 7,532 net tons, South Chicago to Buffalo; steamer Douglas Houghton, Pittsburgh Steamship Co., A. B. Wolvin of Duluth, manager, 308,000 bushels of clipped oats and 60,000 bushels of corn, equal to 7,520 net tons, Manitowish to Buffalo.

Coal—Steamer I. L. Ellwood, owned by Pittsburgh Steamship Co., A. B. Wolvin of Duluth, manager, 7,688 net tons anthracite Buffalo to Duluth; steamer John W. Gates, Pittsburgh Steamship Co., A. B. Wolvin of Duluth, manager, 7,659 net tons of bituminous, Lorain to Duluth.

CHICAGO GRAIN SITUATION.

Chicago, Aug. 5.—It is necessary to again report a very dull grain situation, but rates are maintained at 1¼ cents wheat 1½ cents corn and 1 cent oats to Lake Erie ports, with Port Huron at 1 cent corn and oats, and Lake Ontario ports practically out of the figuring by reason of going engagements through to Montreal on a basis of about 3½ cents a bushel. The high prices of our grain are gradually effecting a desirable increase in local stocks but eastern buying interests are still too inactive to look for any immediate improvement in rates. The shipments, lake and rail, are as follows:

	Week just closed.	Last week	Same week last year.
Wheat, bu.	96,855	209,567	530,214
Corn, bu.	1,102,632	1,849,793	813,140
Oats, bu.	1,066,174	1,120,595	592,694
Total	2,265,661	3,179,955	1,936,055
	Since Jan. 1, 1903.		Same time last year.
Wheat, bu.	11,908,185		15,904,888
Corn, bu.	47,288,420		22,404,717
Oats, bu.	38,663,464		31,205,217
Total	97,950,464		69,514,822

As noted above the stocks of grain show a material increase for the past week. Figures as to stocks follow:

	Week just closed.	Last week.	Same week last year.
Wheat, bu.	3,987,000	3,532,000	4,599,000
Corn, bu.	6,791,000	6,738,000	6,363,000
Oats, bu.	4,299,000	2,928,000	1,507,000
Rye, bu.	317,000	292,000	179,000
Total ..	15,394,000	13,490,000	12,648,000

Capt. W. Boyd, master of the steamer White Star, lately burned, and marshal of the admiralty court at Toronto, died there on Wednesday last.

MAJ. KINGMAN'S ANNUAL REPORT.

In the annual report which Maj. Dan C. Kingman, government engineer at Cleveland, has just filed with the secretary of war he has endeavored to collect statistics relative to the commerce of the ports over which he has jurisdiction. He has gone about it in two ways—by issuing manifests to the masters of vessels to return to him statements of cargoes and by co-operating with the collectors of customs. It is well known that there are no reliable statistics of lake coal shipments. The railways have invariably declined to divulge the amount of coal shipped to Lake Erie docks. The receipts and shipments of iron ore are known to a pound, because they are secured from the shipping and receiving docks; but such is not the case with coal. Some interest therefore attaches to Maj. Kingman's efforts to collate the coal statistics. They are of course as complete as possible under the circumstances.

Maj. Kingman gives the commerce of Toledo as 3,866,722 tons, an increase of 780,480 tons over the previous year. The coal and coke shipped is given as 2,038,510 tons. Lorain's commerce is given as 2,549,496 tons, of which 861,739 tons was coal and coke shipped. Cleveland is given a commerce of 10,151,006 tons, of which 2,504,705 tons was coal and coke shipped. Fairport's commerce amounted to 2,330,480 tons, of which 266,843 tons was coal and coke. The shipments of coal and coke are given at Ashtabula as 1,490,295 tons. The total commerce of Ashtabula was 7,063,167 tons. Conneaut's shipments of coal and coke are put down at 407,826 tons and its total commerce at 5,286,911 tons.

Maj. Kingman's report is as interesting as it is voluminous. He speaks a good word in several places for the government dredge and expects great service from it. The area which drains into Lake Erie from Ohio is 11,950 sq. miles and it is estimated that the annual deposit in the lake is 200 cu. yds. per square mile or a total of 2,390,000 cu. yds., annual discharge. This deposit is a perpetual accumulation and must be steadily dealt with. He reviews the work before him in each harbor, which largely consists of the construction of jetties or breakwaters, and asks for appropriations which range from \$1,000,000 for Cleveland harbor to \$5,000 for Port Clinton. He wants \$240,000 for Conneaut, \$240,000 for Lorain, \$77,500 for Huron, and estimates that it will require \$930,000 to complete the sills and jetties and maintain an adequate channel at the harbor of Sandusky.

CONSTRUCTIVE TOTAL LOSSES.

Shipping disasters bringing up the question as to whether the vessels may be abandoned to insurance companies as constructive total losses are quite numerous on the lakes of late. J. C. Gilchrist of Cleveland has two such cases under consideration with the insurance companies, in the steamer John Craig, stranded in the Straits of Mackinaw and released with great difficulty, and the steamer V. Swain, sunk while unloading coal at the head of Lake Superior. Both vessels have been abandoned to the underwriters. Of course there is the usual doubt as to whether total loss will or will not be allowed. The constructive total loss feature of insurance is so old that every possible question liable to arise in law over it seems to have been threshed out for over a century. Another case of this kind is that of the steamer Empire State, owned by the Folgers, who are well known on the St. Lawrence river. The Empire State suffered extensive damage by fire at Kingston. The owners have abandoned her as a constructive total loss, holding that the damages, if assessed at Kingston, where repairs would include the duty on repairs to an American vessel in a foreign port, would amount to a sum sufficient to make a total loss. It is contended that Kingston is the nearest port of repair and that the damages must be assessed as of Kingston. The rulings of the courts are said to be very clear on this point, but the owners of the Empire State are at a disadvantage, in that their insurance is foreign and if not satisfied with what the underwriters see fit to pay they must go to England for redress in court.

FUTURE OF LAKE SHIP BUILDING.

In an interview in Chicago Mr. George L. Craig of the Craig Ship Building Co., Toledo, talked encouragingly of the future of ship building on the great lakes. He does not expect immediate orders but points out wherein the industry has a great future. Just at the present moment ship building is dull in the sense that new orders are not forthcoming. Mr. Craig said:

"We do not expect any great activity in the ship building industry next winter. The recent disturbances in Wall street have knocked out several projects, and until the money markets have adjusted themselves steamboat schemes of importance must remain in the background. There ought to be plenty of repair and rebuilding work next winter, however, and that will keep the yards busy. Toward spring money may grow easier and permit the carrying out of several plans now held in abeyance. The ship building industry on the great lakes has by no means reached its height. The era of faster and larger ships is at hand, and barring such temporary hesitancy as the present, the next decade, in my opinion, will supply ship builders with all the work they can handle."

The Craig company is now finishing up its two remaining orders. One is a car ferry for E. G. Crosby of Milwaukee which will be completed within a few days. The other is a steel steam freighter for the Young Transportation Co., which is to be launched shortly and which will be named Kensington.

FURTHER ORGANIZATION OF LONGSHOREMEN.

Secretary-Treasurer Henry C. Barter of the International Longshoremen, Marine & Transport Workers' Association, has issued a circular letter to all locals affiliated with the organization, in which he sums up the work accomplished at the Bay City convention and appeals to the locals to push the work of extending the organization. After dwelling upon the necessity for organization and saying that the convention was one of the most successful ever held, he adds:

"The work of the convention as a whole was exceedingly gratifying, and the officers selected showed a desire on the part of the delegates to be liberal in all things, and a wish to create a lively interest in the different localities where organization is essential and necessary. One of the important features of the convention was the decision of the delegates to affiliate our association with the longshoremen of continental Europe. This action will bring us in contact with the workers of our particular craft throughout the world. If you desire to become thoroughly familiar with the general workings of the convention, you should read the proceedings carefully. You will notice that the general trend of the resolutions introduced was for continued organization. Hence, this communication. I respectfully solicit your co-operation in this particular work, and ask that each local select an active committee on organization whose duty it shall be to assist this office in bringing about the organization of every co-worker of our craft in your vicinity. I trust that I may hear from you at your earliest convenience to the effect that your local has selected the above named committee."

MILWAUKEE COAL SUPPLY.

Milwaukee received in round figures 300,000 tons of coal (hard and soft) in July and the receipts for the season to Aug. 1 foot up 1,061,272 tons compared with 668,076 tons on the same date a year ago. Still there is only a short supply of hard coal on the docks, as it moves out about as fast as it is received, and the coal dealers say that the soft coal receipts are if anything short of what they should be at this time. The receipts, net tons, for July and for the season thus far are compared in the following table with receipts during the same periods in 1902:

	Month of July		Season to Aug. 1	
	1903.	1902.	1903.	1902.
Anthracite	110,475	.....	349,106	92,475
Bituminous	189,270	165,975	712,166	605,601
Both kinds	299,745	165,975	1,061,272	698,076

Increased receipts of hard coal are expected during August.

REFLECTIONS ON ST. CLAIR RIVER.

The merging of the waters of Lake Huron into the St. Clair river forms a channel like the neck of a swan; and it is the greatest throat of commerce in the world. The neighboring waterways have truly been called the Venice of America. They speak of the Blue Danube; but what water can be bluer than the waters of the St. Clair river; what more limpid, clearer or more pure. It is as blue as the sky above but more delicately shaded and one has only to lift it in his hands to see how perfectly translucent it is. Rivers usually have their source in some little puddle in the mountains, but here is a river whose source is as flooded as its mouth. Where is there another like it? But marvelous as is its native beauty more marvelous is its commerce. Not even the Mersey with its miles upon miles of docks can prove an equal bulk. Last year Maj. Bixby's reports indicated 44,000,000 tons of commerce. Probably 50,000,000 tons would be a closer estimate. This commerce is carried in great beasts of burden reaching 300, 400 and some 500 ft. in length. Now there is talk of one 550 ft. length and it is likely to come. In the St. Clair river this commerce is compressed into very narrow channels and becomes one of the great attractions to the army of summer boarders along its banks.

EARLY SHIP BUILDING AT HOLLAND, MICH.

The early history of ship building in Holland, Mich., is interesting and a number of the pioneers recall the days when that industry was carried on actively along the shores of Black lake. The first ship yard is said to have been located on the site of the Chicago dock, but the first schooner built near Holland was not a product of this yard. So far as can be learned the schooner Commencement was the first schooner built on ground now included in the city limits. Her builder was Evert Evarts. He undertook the work for A. Plagger and for many years the Commencement sailed between Holland and Chicago. Harm Slagh established the first ship yard at Holland and among the first vessels turned out by him were the Three Sisters, Margaret and Henrietta. Later a ship yard was established at Holland by a man named Beckwith, who built the Four Brothers, Jones and Union. But ship building at Holland languished for many years until the Wolverine Boat Works was established there.

The steel steamer Louis Woodruff, first of eight 6,200-ton steamers building for the Gilchrist Transportation Co., was launched at the Lorain yard of the American Ship Building Co. on Wednesday. She is 436 ft. over all, 416 ft. keel, 50-ft. beam and 28 ft. deep. She will have triple-expansion engines with cylinders 22, 35 and 58 in. in diameter and common stroke of 40 in., supplied with steam from two Scotch boilers 13 ft. 2 in. in diameter and 11½ ft. long and fitted with Ellis & Eaves draft.

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THE COLUMBIA IRON WORKS.

The present year seems to be one of failure in ship building enterprises. Although started in a moderate way, it was thought that the Columbia Iron Works, near St. Clair, Mich., would develop into quite a ship yard, as contracts for four lake freighters, two of them of the largest type for J. C. Gilchrist of Cleveland, were secured during the past winter before the yard was fully laid out. One vessel, the steel steamer Minnebago, of about 2,000 tons capacity for T. J. Prindiville and others of Chicago, was completed. A second vessel of about the same size was in the water, and with the keel of one of the Gilchrist steamers laid it was thought everything was going along satisfactorily. It was suddenly reported a few days ago, however, that the company was financially embarrassed. Insufficient capital in the beginning seems to have been the cause. The result is that under an arrangement made when the ships were ordered, J. C. Gilchrist has taken charge of the ship yard as far as its management relates to the completion of his two steamers, and R. S. Jenks of Port Huron has been appointed receiver of the ship building company. The third steamer still in the yard is for the Hall Coal Co. of Odensburg and is so near completion that she will probably be out in a month if further financial difficulties do not follow.

A few views from the ship yard are presented herewith. It has a frontage of 1,800 ft. on the St. Clair river and embraces altogether about 50 acres. The equipment of the different buildings in the ship yard is of course modern. The punch shop is 260 ft. long and 65 ft. wide. The second floor is carried upon steel trusses and is utilized as a mold loft, 200 ft. long and 65 ft. wide. A drawing office, 20 ft. long and 65 ft. wide, is also upon this floor. The furnace and forge building is one story in height and is 150 ft. long and 50 ft. wide. The machine shop is 180 ft. long and 65 ft. wide, with a gallery on one side and an erecting wing 40 by 35 ft. The foundry is 96 by 65 ft. and is equipped with two cupolas, one of 7 tons capacity and the other of 2 tons. The power house is of brick, 37 by 75 ft. The wood-working shop is a two-story building, 30 by 75 ft. Another building is used as the office and store room. The yard is completely interlaced with tracks so that every building has railway service. Three vessels may be put down in the water-front part of the yard that is devoted to berths for new ships.

The barge Champion, sunk in the St. Clair river near the head of Russell's island, will be removed by the government with dynamite. Bids for the work will be opened by Maj. Bixby, government engineer at Detroit, today (Thursday). The Steel Corporation's steamer Corona and the tug Columbia pulled on the wreck with a 9-in. hawser on Wednesday afternoon of last week but only succeeded in breaking the heavy line. The wreck could not be budged. Maj. Bixby will at the same time open bids for the removal of the wreck of the steam barge Stimpson, which burned near the Riverside hotel. Capt. Slyfield, who owned the Stimpson, has sold the hulk and machinery to George W. Pfohl of Buffalo. He is at work upon it but has been told that he must remove it by today, otherwise it will be blown up.

MR. CHARLES M. SCHWAB RESIGNS.

Coming events cast their shadows before them. The shadow of Mr. Charles M. Schwab's retirement from the presidency of the United States Steel Corporation has loomed large for several months. His resignation has now become effective, and probably one of the most remarkable men of his time has retired from active participation in the management of the world's greatest single corporation. Mr. Schwab is still only forty years old—a period of life when the majority of mankind begin to acquire a little wisdom. He has had a career vouchsafed to few; he has occupied responsible positions; and he has acquired a large fortune. He has done more work than most men can accomplish in eighty years. Therefore he owes apologies to no man. It would be foolish to set forth his career as an example of what a young man may accomplish under American conditions. Only a few in 70,000,000 can do such a thing, and even if they could the opportunity would be lacking. So there is nothing to be derived from the contemplation of his career. It is merely an example of remarkable energy on the part of one man. According to the newspapers formal announcement of Mr. Schwab's resignation was made in the following terms at the conclusion of the meeting of the board of directors of the Steel Corporation:

"Mr. Schwab, in consequence of continued ill health, tendered his resignation as president and it was accepted. W. E. Corey, who has been for some time performing the active duties of president, was elected to the vacancy. The office of chairman of the board of directors was created and E. H. Gary was elected to the position and will continue to devote his entire time to the business of the corporation. An advisory committee, to consist of three directors, besides the president, to consider and make recommendations concerning questions of manufacturing, transportation and operation, was created and E. G. Converse, William Edenborn and D. G. Reid were elected as members of this committee.

Mr. Schwab will continue to be a member of the board of directors and of the finance committee."

There is an error in this statement. Mr. Gary has been the chairman of the board of directors since the corporation was formed. It is probably meant that hereafter this office is to be regarded as of more practical importance since it is specifically stated that he is to devote his entire time to it. The creation of an advisory committee on manufacturing, transportation and operation is an important departure. It probably means less centralization of power. Mr. William E. Corey, the new president, is thirty-six years old and is a Carnegie product, but his experience has been wholly in manufacturing lines.

Mr. Schwab is credited with making the following informal statement:

"I think I have been very unfairly treated by the newspapers in regard to the reasons for my retirement. A number of reasons, including the United States Ship Building matter, have been given for it, but none of them is true. As a matter of fact the ship building question has never been a subject of discussion between myself and the directors. On my return from Europe six months ago I tried to get Mr. Morgan and the directors to



Views in the Yard of the Columbia Iron Works, St. Clair, Mich.

accept my resignation, but was unable to do so. That does not look as if I had been forced out. Later I appealed to Mr. Frick and through him have finally succeeded in inducing the directors to accept my resignation. I am as deeply interested in the United States Steel Corporation as ever. I am still the largest stockholder. My retirement is on account of ill health—nervousness. I have been in bad health for six months or more."

An unusual feature of the case is a statement from Mr. J. Pierpont Morgan himself, who says:

"I deeply regret that the condition of Mr. Schwab's health renders it impossible for him to continue at the head of the Steel Corporation. His loyalty to the interests entrusted to him cannot be doubted, and from the early days of the inception of the corporation he gave to its formation, unification and development his unequalled powers as an expert in the manufacture of steel."

It is reported that Mr. A. C. Dinkey, superintendent of the Edgar Thompson steel works at Braddock, will succeed Mr. Corey as president of the Carnegie company.

AROUND THE GREAT LAKES.

It is understood that the firm of Maloney & Roulett will build a new boat for the Green Bay trade. The vessel will be about 120 ft. long.

John Urie is building at the foot of Thirteenth street, Bay City, a tug for Sharp & Dawson. The machinery of the old tug Witch of the West will be used in the new hull.

The steamer John Crerar, last of the canalers built at South Chicago for the Wolvin St. Lawrence line, has just left the ship yard. Her initial cargo will be that of grain from Chicago to Quebec.

James Davidson's schooner Montezuma, largest wooden vessel on the great lakes, made her maiden trip last week in taking a cargo of soft coal from Toledo to Duluth. She is 360 ft. over all, 46 ft. beam and 26 ft. deep.

The passenger steamship lines running out of Milwaukee have done a thriving business this year according to figures given out by the Goodrich, Crosby, Manistee, Ludington & Milwaukee and Barry lines, which have altogether up to Aug. 1 carried 141,000 persons.

The steamer Mary of the Indiana Transportation Co. which suffered total destruction of her engine on Lake Michigan last Sunday will be out of commission for the rest of the season. The underwriters have ordered her machinery taken out for a further survey.

The steamer C. F. Curtis will go to Milwaukee for extensive repairs. While passing the St. Clair flats on her way up the Curtis was in collision with the Lehigh Valley liner Wilkesbarre and received several large holes in her side. Temporary repairs were made at Marine City.

A very quick job of repairing is being done on the steamer City of South Haven at Chicago. As known, the steamer dropped her rudder near South Haven. A new rudder, weighing 4,500 lbs., was finished at Cleveland on Wednesday and hurried to Chicago by rail. It is expected to be stepped so that the steamer will be ready to leave on Saturday.

While leaving Tonawanda harbor one day last week the disabling of the steering gear on the schooner Noquebay caused the vessel to sheer into the swing bridge leading to Little island and to knock the structure off its foundation. The bow of the Noquebay was considerably damaged and repairs to the bridge will keep it out of commission for several days.

The house of commons at Ottawa has voted \$18,000 for the Sault Ste. Marie canal. It was represented as humiliating to Canadians that practically all the traffic was done on the American side. Mr. Tarte, ex-minister of public works, said that he had once asked for \$50,000 but could not get it because his colleagues were afraid of public opinion, while the Americans were constantly working to improve the American side.

A gas buoy, painted black, showing a fixed white light of 10 seconds duration with eclipse of 10 seconds has been substituted for the float light heretofore marking the Russell island shoal. Vessels have been running down and upsetting the float regularly ever since it was established at the head of Russell's island, St. Clair river, and the gas buoy was substituted for the float light in the hope that masters would be more careful.

Last week the steamer George C. Howe, one of the vessels of the Wolvin St. Lawrence fleet, delivered 2,575 gross tons of anthracite coal at Chicago. Capt. Harry Pedersen declared her to be the greatest carrier of her size on the great lakes. The performance of the Howe in landing so large a cargo for her size (Canadian canal dimensions) is taken by vessel men to mean that the vessels of the Wolvin line are the handiest of modern freighters for traffic on the great lakes.

The Sandusky, a wooden vessel built in 1873, and owned by M. A. Bradley of Cleveland, was totally destroyed by fire with a cargo of 800,000 ft. of lumber early Tuesday morning at Tonawanda. One of the sailors, John Kent of Baraga, Mich., lost his life. The watchman, who discovered the fire, aroused the rest of the crew in time but could not arouse Kent. The Sandusky was 178 ft. long, 33 ft. beam, and measured 837 tons. She was chartered for the season by O. W. Blodgett.

Mr. Harry Coulby, general manager of the Great Lakes Towing Co., says that the company is doing more than 80 per cent. of the towing on the great lakes. The latest concern to enter into contract with the towing company is the Hines Lumber Co. of Chicago which has six steamers and nine barges, besides

some chartered vessels. The campaign to get the lumber tonnage, which is quite profitable owing to the fact that nearly every lumber steamer has a consort or two, has been generally successful.

As a result of the visit of the delegation from the Lake Carriers' Association and Maj. Dan C. Kingman, government engineer, to Ashtabula last week, the representatives of the railways controlling dockage at Ashtabula harbor have expressed the disposition of their companies to materially assist in the work of displacing the bridge to which objection was made and eliminating the bend in the river. The suggested remedy for the present condition is a lift bridge and the widening of the river at the point about 60 ft.

The old boat yard on Ellicott creek, Buffalo, formerly occupied by Rose & Co., but abandoned for many years, have been leased by W. H. Follette. Mr. Follette this week placed a force of thirty carpenters at work in the yard upon two canal boats for New York parties. These boats will be different from anything ever seen on the canal. They will be built with higher sides, new style steering apparatus and of a larger capacity than any canal boats now in use. It is understood that Mr. Follette has orders for twenty similar boats.

The supervising inspectors who have returned from the conference at Washington which lasted over a month are as mum as oysters concerning their doings. They all claim that they were enjoined to secrecy by Secretary Cortelyou, who desires nothing published until he has thoroughly digested the subject and completed his plans for changes. In point of fact one supervising inspector was in hot water as a suspect for having talked; but the charge proved unfounded later. The most important matter taken up was the revision of the laws regarding the building of marine boilers.

The little schooner Tennie and Laura of North Muskegon was wrecked on Sunday morning 10 miles northeast of Milwaukee and Mate Charles Marbach was drowned. The schooner left the east shore on Saturday and when in midlake struck the storm. The mate and Capt. John Sather manned the pumps until the schooner capsized early Sunday morning. They managed to get in the yawl and drifted about until the Mark Covell sighted them. In trying to pass a line to the unfortunate men the yawl capsized. The mate was unable to get the line and sank. Capt. Sather was saved.

A brass cap on the air pump of the D. & C. steamer City of Cleveland gave way when the boat was off Colchester on her regular trip to Cleveland on Wednesday night of last week, and instead of the passengers being landed in Cleveland they found themselves back in Detroit. And a surprised lot they were. The repairs were made in a few hours and the steamer went on her regular route again in the evening. The passengers were, of course, not aware of the accident. When it was discovered that there was something wrong with the air pump the anchor was immediately dropped to wait for the City of Detroit, the engineer thinking that he could procure a duplicate cap from that vessel. There was none on board, however, so the Cleveland put about for Detroit under her own steam.

The experience of the schooner Glen Cuyler on Lake Michigan last Sunday is an evidence of the fate that is awaiting the old craft still sailing the lakes. The Cuyler left Wells, Mich., on Saturday with a cargo of lumber before the northwest gale broke. After the little schooner had made her way down the lake until opposite the entrance to Green bay the wind became stronger and soon the boat was laboring in the full force of the gale. Water began pouring in through her loosened seams in a dozen places. The crew left the vessel to drift and manned the pumps, and by the most heroic efforts succeeded in keeping the craft afloat throughout the night. In the morning the steamer Neff was sighted and the schooner was towed to Manitowoc. Her decks were awash when she was made fast to the dock. The Cuyler belongs to a fast-disappearing type. She was built in 1850, being one of the oldest vessels now in service. Ben Jacobson of Green Bay is owner and master of the schooner.

CANADIAN SHIPPING NOTES.

The sidewheel steamer Queen, purchased in Montreal in 1902 and taken to St. John, N. B., in the spring, was burned at her wharf in St. John last week.

The Canadian fleet of great lakes steamers are getting little or no cargo at present. This is the dead season for Canadian trade, there being but little business outside the spring and fall grain movement from the west.

The sum of \$235,000 has been voted by the Dominion parliament for additional work on the Trent Valley canal, in process of construction from Georgian bay to Lake Ontario. The question of the Lake Ontario terminal has not been determined.

At Newcastle-on-Tyne last Monday the steamer Neelbing was launched for a company of which T. Marks & Co. of Port Arthur, Ont., are the principal shareholders. The Neelbing is a steel steamer 256 ft. long, 42 ft. beam and 25 ft. deep, and has a carrying capacity of 3,000 tons or 18 ft. draught. She has a speed of 12 miles an hour.

The Dominion government has purchased the Newfoundland sealer Neptune for the purpose of investigating the possibility of navigating Hudson's bay. This is not the first expedition the government has undertaken with this object in view, the result in previous investigations being that the period, during which navigation was open was too short to warrant the bay being considered a liable route for Manitoba and northwest grain.

PILOT JAMES WARD'S LICENSE RESTORED.

When the steamer Chemung sank the tug Cheney outside of Buffalo harbor the local inspectors of steamboats at that port suspended the license for six months of James Ward, the mate of the Chemung. Ward appealed his case to the supervising inspector of the district, Capt. James Stone, who heard the appeal in Buffalo on Monday last. Capt. Stone modified the sentence to one month's suspension, and as the month had just expired, Ward's license was accordingly restored to him. Capt. Stone found that the pilots of both the Chemung and Cheney had failed to give the whistle signals, and though the failure to do so had no bearing upon the collision whatever, he held it to be important that these signals should be given in all cases. The fact that it was not given was a violation of a rule and it was upon this point alone that Capt. Stone found him guilty. For the accident itself he was in no way responsible. Capt. Stone's review and decision is as follows:

"On June 23 at about 3 a. m. a collision occurred between the steamer Chemung and tug boat O. W. Cheney on Lake Erie about 6 or 7 miles west of Buffalo, resulting in the sinking of the tug and drowning of the captain, fireman and cook. The accident was duly reported to the local board of steamboat inspectors at Buffalo the same day. On the 24th and 26th an investigation was held regarding the conduct of the licensed officers in charge of the respective steamers, resulting in the suspension of the pilot's license of James Ward, the pilot in charge of the steamer Chemung, for a period of six months. Capt. Whalen of the tug having lost his life his case, of course, could not be considered. James Ward, pilot of the Chemung, appealed from the decision of the local inspectors to the supervising inspector of the district for a new hearing. The case was tried on appeal at Buffalo on Aug. 3, developing the following facts: The Chemung, a large freight steamer with a cargo of wheat on board, was proceeding down Lake Erie bound for Buffalo, heading east when at a point below Point Abino and about 6 miles west of Buffalo breakwater. The pilot saw slightly on each bow about 3 or 4 miles distant the signal lights of two steamers heading up the lake, the Chemung heading between the two steamers and going her usual gait of about 12 miles per hour, and it appears from the testimony of the approaching steamers, which subsequently proved to be the tug boat O. W. Cheney and tug boat Frank S. Butler, that they both saw the Chemung about the same time. The Cheney, being somewhat ahead of the Butler and on the port bow of the Chemung, steamed along under check, pointing a little to the starboard of the approaching steamer, evidently with the intention of securing the tow on entering Buffalo harbor. No whistle signal was given by either of the steamers, which was clearly a violation of the law, and inexcusable as shown by the evidence. The sounding of whistle signals when steamers are meeting end on or nearly so, so as to involve risk of a collision, is for the double purpose of announcing the presence of an approaching steamer and also to designate the side on which the steamer first signaling wishes to pass. (Rule 1 and 5, pilot rules for great lakes.) This rule applies to all steamers of whatever character regardless of the kind of business in which they are engaged, or if propelled by machinery driven by other than steam power or whether they subsequently pass each other or not. Under this condition of things the two steamers continued to approach each other while the pilots in charge were at their respective posts of duty. The performance of each vessel was clearly and distinctly seen and understood by both pilots. Although the weather was somewhat rainy lights and their character could be seen and determined a long way off. The pilot and lookout on the Chemung were subsequently aware that the approaching steamer was a tug and fully expected, as is the usual custom, that the tug would be brought around under a starboard helm on the Chemung's port side on a course substantially parallel with that of the steamer and at a safe distance. It is fair to assume that the tug captain was aware that such steamers as the Chemung could not be suddenly stopped, or even her course materially changed, after danger of a collision presented itself. According to an unwritten law, growing out of custom, when a tug seeks a tow in the open lake it is her duty to keep out of the course of the approaching vessel. In this case the avoiding of danger devolved entirely upon the tug. She has immense power proportionate with the size of her hull and her movements could be controlled very quickly when in the hands of a skillful master such as Capt. Whalen was known to have been. It appears that when the steamers were about 300 ft. apart, each presenting their port bow to the other and heading entirely clear of each other, the tug suddenly swung to port as if under the influence of a starboard helm, and so continued to swing until both the Cheney's colored lights were seen from the tug Butler, which was still heading up the lake towards the Chemung; but either the distance allowed to make the turn was insufficient or the steering gear in some way became fouled, for before the tug could swing into a parallel course with the steamer she came directly across the stem of the Chemung, resulting in a collision which sunk the tug and caused the loss of life previously mentioned. When the pilot on the Chemung discovered that a collision was inevitable he immediately signaled the engineer to reverse the engines, which signal was obeyed. The steamer struck the tug before the engines could have any influence over the speed of the ship. As soon as possible after the collision the Chemung turned around and headed for the scene of the collision, signaling the tug Butler and informing

the captain of what had happened. The tug soon located the survivors on the Cheney's life raft and took them on board.

"From the evidence in the case I do not find that the accident was the direct or indirect result of the violation of rule 1 in not sounding and exchanging whistle signals, as the evidence shows the steamers to have been perfectly aware of the presence and intention of each other while running over a distance of 3 or 4 miles and that signaling could not have added anything to the knowledge that each already possessed. I therefore exonerate Pilot James Ward of the steamer Chemung from all blame for the sinking of the tug Cheney but find him guilty of a violation of rule 1 of the pilot rules for the great lakes in not sounding his whistle signal as prescribed in said rule, which finding would have been the same even though no accident had occurred. I, therefore, instruct the local inspectors to restore to Pilot James Ward his pilot license, believing the suspension of which from June 30 until this date is sufficient punishment for the offense committed in simply neglecting to observe the laws governing whistle signals."

JAMES STONE."

AGREEMENT WITH THE CUNARD COMPANY.

The long-expected agreement between the British admiralty, the Board of Trade, the postmaster general and the Cunard Steamship Co. has been made public. It bears the date July 30, so that the exact terms of the agreement have probably just been arrived at. Accompanying the agreement is the draft of a trust deed, securing the debenture stock on which the government's advance of \$13,000,000 for building the two new steamships is made. Instead of being paid by actual weight for carrying the mails a fixed payment of \$340,000 per year will be made during the life of the contract, which is for twenty years, dating from the first sailing of the second of the two new steamships. It provides that the mails shall be carried with greater speed than at present. All the company's Atlantic and Mediterranean steamships, including the two new flyers, which are to have a speed of from 24 to 25 knots, are to be at the disposal of the admiralty for hire or purchase in case of war. The company is to continue British in ownership and in management and the same condition applies to at least three-fourths of the crew. On the Campania, Umbria and Lucania, until the new vessels have been completed and thereafter on the new vessels, all the certificated officers, other than the engineers, and not less than half the crews, must belong to the royal naval reserve. The company is not allowed to sell any vessel whose speed is 17 knots and upward without the consent of the government. For these concessions the government agrees to subsidize the vessels at \$375,000 a year each, thus making a total annual payment to the Cunard Company of \$1,000,000. The loan of \$13,000,000, which will bear interest at 2½ per cent., is to be repaid in twenty annual installments and will rank as a first charge on the whole Cunard fleet. That the very stringent conditions regarding speed has been modified is shown by the fact that the agreement contains a stipulation that the subsidy is to be reduced if the steamships fail to make a minimum speed of 23½ knots. The original tender to the ship builders was to the effect that if the steamers failed to average 25 knots during a period of twelve months they were to be rejected; but no ship builder could be found who would accept so onerous a condition. The trustees for the debenture holders are Sir Francis Hopwood for the government, Lord Inverclyde for the Cunard company and Lord Revelstoke, who has been elected by his colleagues. The company must issue to the government's nominee such voting power as will prevent the passing of any special resolution by the shareholders in violation of the contract.

WORK AT NEWPORT NEWS.

Newport News, Va., Aug. 5.—The Newport News Ship Building & Dry Dock Co. is now completing a large brick addition to its iron, brass and manganese bronze foundry that will be used for the manufacture of steel castings. The builders' trial of the battleship Missouri would probably have taken place by this time but for the order of the navy department to alter the big 12-in. turrets in order to avoid the defects discovered by firing the guns of the Maine. Both of the Missouri's turrets have been removed and it will be several weeks before the battleship is ready for trial. The armored cruiser Maryland will be launched about Oct. 1. The battleship Minnesota will be built on the ways recently vacated by the armored cruiser West Virginia.

French naval officers have recently given out highly satisfactory reports of trials of more vessels of war fitted with Belleville water-tube boilers. The Sully, a cruiser of 20,500 H. P., was given a trial with mixed fuel, petroleum and coal, and the results as to working of engines and boilers were very gratifying. On a six-hours' low-power trial the cruiser Duplex of 17,100 H. P. made 13.5 knots at 3,900 H. P. The Goliath, an auxiliary naval vessel, designed for 1,400 H. P., developed on trial a maximum of 2,000 H. P. with a consumption of 70 kilos of coal per square meter of grate per hour. The boilers worked well in every instance.

The work of fitting the steamships of the Red Star Line with wireless telegraph instruments has been completed. The Kronland, which sailed for Antwerp on Saturday, had her instruments placed on her during the week she was in port. The Finland, Zealand and Vaderland have also been equipped.

Problems of Lake Transportation

By LIEUT. W. H. FROST, U. S. Navy.

There is a deep-seated conviction in the minds of lake seamen and vessel owners that a good pilot in charge of each vessel is all that is needed to insure her safety and make quick passages between her ports of call. If this conviction was held by but one of these classes with the other either neutral or opposed to it, the present danger would not be so great; at least, we could venture the hope that the problems I shall discuss would work out themselves in the near future. With the fancied security felt by both classes today, and the strong opposition which will be presented by lake-men to any change of existing conditions, time and extreme patience will be necessary to bring about any suggested improvement in present methods or customs.

That there is need of improvement is demonstrated by an examination of the list of marine casualties and loss of life on the lakes, which occurred within the scope of the operations of the life saving service alone during the fiscal year ended June 30, 1902. Of the total of 237 lives lost the greater portion could have been saved by proper precautions; of the 235 marine disasters, involving a property value of nearly five millions of dollars and a total loss of well over a half million, it is safe to say that more than half were due to preventable causes. In the matter of stranding alone it would scarcely be claiming too much to assert that three-fourths of these disasters in thick weather are due to negligence, carelessness, or professional ignorance of the master, or other avoidable causes.

In a former article in the Marine Review I made the statement that the day is not far off when transportation companies will require their masters and mates to be navigators, in a limited way, as well as pilots in order to lessen the chances of disaster to their properties and to run their vessels with the greatest economy. To say they are navigators would be a travesty on the word. There are, of course, individual instances of masters who are just as capable of navigating their vessels to meet all local requirements as of piloting them, but these instances, unfortunately, are very few. These few individuals are deserving of every praise which can be showered on them, for they are fighting for knowledge against direct opposition from those of the class who have not the energy, ability or desire to learn, and from the indirect opposition of their owners by reason of their apathy and indifference. There is much excuse for this attitude of the owners; for important affairs of business as freight, charters, etc., are tangible to them, while questions of the sea are so technical and difficult to understand that when brought to their attention they are apt to term them visionary and lay them aside without further thought. But what can excuse the lakemen themselves for the attitude they assume? They are willing to "let well enough alone," as they term it; but is it "well enough?" Because one is afraid to show the vastness of his own ignorance is no reason why he should attempt to turn his neighbor from a course beneficial alike to himself and his employer. My hope is to show that no custom or method connected with this subject in vogue on the lakes is "well enough" when there is such decided room for improvement.

It is suggested that changes might be instituted either by (1) the lakemen, (2) the vessel owners, (3) the insurers, or (4) the federal government; and when the others recognized the need their cordial co-operation would be tendered toward the consummation of the desired reform.

Perhaps, theoretically, the solution of the difficulty would be for the lakemen to improve themselves; but without the incentive of future gain or pressure from the owners this theory will never work out in practice. It is too much to expect men who have spent most of their lives in a struggle for little more than bare existence to take an initiative of such importance, especially when they can see no real necessity for it. What is good enough for one master, who has been lucky in keeping out of scrapes throughout his career, is good enough for another; and so on throughout the list, till we recognize the wall of indifference that confronts us. If vessel owners continue their present indifference this obstructing wall will never be crumbled away except with the utmost patience, perseverance and energy on the part of the men themselves.

It must be conceded that many of the masters and mates on the lakes are fine pilots, if that term is used in a restricted sense. Keen sight, good judgment and a thorough knowledge of all navigable waters compose their stock in trade, and with this limited stock they have performed their work for years in a manner that could not be excelled by pilots in any waters of the world. This very success has been the means of holding them down in the same rut in which they have been running for years. The owners themselves view the situation as one which has been brought to a certain level by years of experience and think any proposed changes not worth the while so long as they are fairly successful financially, and the underwriters pay up without too much trouble when disaster occurs. Such indifference is soon observed by the lake men with the result that nothing is done by either side towards improvement. What actually does happen is that these men retrograde and unblushingly acknowledge it. No body of men can be held at a high point of efficiency unless pressure is kept on them by their employers or substantial inducements offered for improvements.

It might not be out of place here to mention and discuss a

few of the subjects in navigation with which all masters should be on as intimate terms as with the alphabet: (1) the compass and its compensations; (2) pelorus or dumb compass or any instrument for taking bearings; (3) parallel rulers; (4) deviations; (5) variations; (6) lead and line, and sounding machines; (7) azimuth and tables; (8) deviation tables; (9) laying off courses and bearings on the chart; (10) the barometer; (11) laws of storms and preparations to meet them; (12) use of oil and sea-anchors; (13) fogs; (14) methods of finding ship's position in fogs, snow, mist, or thick weather generally, or when near land; (15) a few laws of magnetism and the relation of the compass to the earth's and ship's magnetism.

This seems to be a formidable list but in reality is not beyond the learning powers of any reasonably intelligent man.

IMPORTANCE OF THE COMPASS.

Of all instruments used in navigating a vessel, by long odds the most important is the compass with its accessories, and most unaccountably, it is the least known or understood, not only by those who use it but by most of the equipment officers of the transportation companies. The same mystery surrounds the compass as other magnetic or electrical instruments and the depth of this mystery seems unfathomable to the average-minded seaman. A little study of these instruments and the laws of magnetism would soon dissipate the fog that surrounds them and give to the mariner the full confidence in the compass which it deserves.

Deviations and variation are so intimately connected with the compass that a study of the last must necessarily embrace the other two. And while deviation is generally known to the seaman as the error of the compass due to local attractions, and variation due to something outside the ship, neither subject is fully understood. Their existence is acknowledged and sometimes they are correctively applied to courses and bearings, generally by a rule of thumb without knowing or inquiring into the reasons why. If owners and seamen had even a superficial knowledge of the subject their fancied security from disaster; after a compass adjuster has performed his work, would be displaced by a wholesome knowledge of the exact effect of such adjustment. How can any sane man suppose that an adjuster is able to compensate a compass so that it shall be errorless under the varied conditions of sailing? But herein lies a real danger—a blind confidence born in the mind of the master that his compass needle points to the magnetic north, or the true north as far as he knows, whether he be loaded light or to his greatest draught. If his compass is adjusted when he is on an even keel he soon finds something radically wrong with his courses when his ship is drawing 12 ft. aft and 1 ft. forward. A little study would put him on his guard and show the error to be a natural consequence of converting what was formerly horizontal iron into two components, one vertical and the other horizontal. A series of observations under different conditions would teach him that his compass would be correct only when his ship was in exactly the same condition as when the adjustments were made. A highly magnetic cargo would then have no more terrors for him than simple ballast.

Too often compasses are placed in pilot houses without taking any of the surroundings into account. I have found them boxed in just forward of the iron spindle of the steering wheel with the end of the spindle less than 18 in. from the center of the compass; others with wire tiller ropes directly under them; another with a wire forestay directly over and so near that a notch was cut in the box for the passage of the stay; others surrounded by brass trimmings, and apparently free from the influence of any iron or steel in the immediate neighborhood, but these trimmings were found to be mere coverings to hide these temporary and permanent magnets; and almost without exception these compasses were placed with their lubber lines at an angle with the keel line of the ship. So varied were the faults found, some of minor but most of great importance, that I cannot venture nor is it necessary to go over them in detail in this article. Those mentioned, however, go to prove that the compass is not understood by the men who are using it, while the ignorance displayed by builders and owners is simply woeful. If there are any excuses to be offered by the masters and pilots for their contribution to this state none can be made by builders; nor is the weight of this responsibility much less upon the owners. The latter take too much for granted; they expect a builder to solve every problem connected with a ship as well as to build her, while the builder, on his part, believes his work is only to place a complete ship in the hands of the owner; and then these two place upon the master the responsibility of working out his own salvation in running her. And run her he must in all kinds of weather or the first time he reports he is brought up with a round turn for his delay.

Let us suppose that the compasses are installed in their proper places and the ship ready to sail. A compass adjuster adjusts them as best he can by sprinkling magnets, some fore-and-aft, some transverse and some even vertical around the pilot house. Although it is a well-known fact to all navigators that in a new ship her magnetic character changes for the first year or two and then settles down to a normal state, no thought is given to it after the adjuster leaves her, but the master sails on and on regardless

of changes. Of course he knows he is not bringing his ports on the courses he should and attributes the error where it belongs—to the compass—but is unable to explain or correct it. He "cuts and fits" his courses from time to time in making frequent trips between the same ports, and finally finds the approximate error of his compass by "trial and error." With the many ranges in the bays, rivers and harbors of the lakes he could have found the same results with absolute accuracy and immediately if he had taken the trouble to observe a bearing, and then knew how to use it to get his error. The true or magnetic bearings of these ranges are given on the government charts, and given for the very purpose here indicated. Besides getting the error of the compass on certain courses by means of these ranges the master could, in a short time, construct for himself what the compass adjuster should have given him—a deviation card of the residual deviations after the adjustment.

Included in what is usually termed the "error" of the compass is the "variation." This is the angle, in northern latitudes, made at the position of the compass on the earth's surface, between the lines running to the true north pole and the north magnetic pole, and varies between the extreme limits on the lakes of $10\frac{1}{2}^{\circ}$ westerly at Sackett's Harbor and $8\frac{1}{4}^{\circ}$ easterly at Duluth. Many of our lake masters correct their courses and bearings by compass for variation but altogether too large a number not only never correct for it but do not even understand it. Because it changes continually as we go from one place to another one can see at a glance the mischief that variation causes and the importance of correcting for it in all work with the compass. It will strike one as manifest, too, that ignoring it on a run will force the ship to sail a longer distance than her apparent course measures. For example, the distance on a great circle course from Southeast shoal in Lake Erie to Waverly shoal, about 2 miles outside of Buffalo, is 192.8 miles, and by the mercator course about 194.5 miles. The distance run between these points by some of the largest passenger steamers on the lakes varies between 198 and 211 miles, a good part of the excess being due to the fact that the variation which is $1\frac{1}{2}^{\circ}$ at Southeast shoal and $5\frac{1}{2}^{\circ}$ at Buffalo is entirely ignored.

USE OF THE LEAD LINE.

Turning now to some simpler subjects of those mentioned, let me first say a few words about soundings. The importance of taking them in thick weather can never be overestimated. They and the compass are the only guides the navigator has when he has lost his bearings or has become suspicious of his position as given by dead reckoning. The master who neglects to use his lead frequently when he is shut in by fogs, mist, snow, etc., should be made criminally liable and his owner forfeit his insurance for any disaster that happens. Nothing but the most drastic measures will force this lost practice into the prominence it truly deserves. Any man who questions its importance has only to examine the list of stranded vessels at the end of a season and note the large number that has taken the ground during thick weather. What excuse has a master for running ashore in calm weather and no sea? Rain, smoke, snow, fogs, mists—all these should put him on his guard and make him doubly careful. Unless he knows with accuracy the deviation of his compass on the courses he has steered even the comfort of this guide will be denied him and he will be left to rely on soundings alone. The ready and resourceful navigator will begin his systematic soundings long before his judgment tells him he might possibly be in the neighborhood of danger. With an accurate chart at his disposal, a bit of tracing paper and a pair of dividers he will have the ready means of plotting the course of his vessel over the ground as she proceeds on her course.

The lead and line must have been in use since the very beginning of navigation. Few changes have been made in its construction but rapid advances have been made in instruments to take its place. Such instruments have advantages in accuracy over the lead and line as well as the very decided advantage of easy manipulation at all speeds in moderate depths of water. The fastest vessel on the lakes while running at her highest speed could sound with a machine in any part of Lake Erie, Michigan, Huron, and most of Superior. These machines are easily handled, accurate, and require only ordinary intelligence in their use.

In dealing with weather it might not be amiss to call attention to the importance of oil and the knowledge of how to use it when a vessel is being washed by seas, is unmanageable in heavy seas, or is carrying a deck cargo. A bag of oil on the anchor chain or half way out on the line of a sea anchor will produce marvelous results. Barges and lumber schooners cast adrift by their consorts in heavy weather have plenty of material at hand to construct a sea anchor; with this and the aid of oil their chances of reaching land may be vastly increased.

The owner is unable to furnish his officers with brains but he is in a position to furnish them with the instruments and inducements to use what brains they have. If the fact is recognized that brains and horse sense are requisites for filling certain positions both will be in evidence when the call is made. This greater intelligence may cost more dollars in the beginning but it is "bread cast upon the waters" in the long run. This presupposes that neither a hull nor a cargo is insured for its actual full value, and that delays due to groundings, collisions and longer courses can be measured in dollars.

Generally speaking, a ship with an ordinary boat compass is supposed by her owner to be fully provided with all the instruments necessary for her successful navigation. If the master feels the need of others he must go down in his own pocket for the purchase money. On the other hand if the chief engineer

wants new gauges, a new switchboard, or a new indicator, he places his request and it is usually granted because the owner, knowing more about the motive power, and its importance, thinks it might be a good thing to have, economically. While he is insured against accidents to his vessel he thinks the insurers might as well take chances and earn their money. I shall expect to show later that owners or the public through the owners pay for this in the end.

The expenditure of a few hundreds of dollars would buy an equipment of instruments amply sufficient for every purpose of navigation on the lakes. A compass with a compensating binnacle, a patent log, a sounding machine, and a pelorus or one of the numerous shadow dials, would form a valuable equipment and one of which the use could be learned easily by most of the masters afloat today.

In proposing any changes in existing customs and raising the requirements to fill individual positions inducements should be offered to attract good men and then bring out the best that is in them. Individual efforts in this direction might not lead to success on account of the wide field for employment open to good seamen. Organization has been found to be one of the most powerful forces of the age in working out economical problems. In the Lake Carriers' Association we already have a body which could add to its present duties the new one necessary to carry into effect any approved system in the organization of the men employed on the vessels of its members. The navy department perfected a system for dealing with the enlisted branch and finds it has been the means of elevating the men both morally and mentally. I shall briefly outline a modification of this system as a working basis, to meet changed conditions and local differences:

PROPOSED ORGANIZATION INVOLVING MERITED ADVANCEMENT.

The masters of vessels owned by the Lake Carriers' Association to be divided into two general classes—(1) those commanding steamers carrying passengers alone or passengers and freight, and (2) those commanding freight vessels alone. Each of these general classes to be divided into two subdivisions—(1a) those of and above a certain speed and tonnage carrying passengers and but little freight, and (1b) those below the above speed and tonnage; (2a) those freighters of and above certain speeds and tonnage, and (2b) those below these speeds and tonnage, and all sailing vessels or vessels without motive power in themselves. All masters, of course as a legal necessity, must be licensed, but besides the inspector's examination the men belonging to each class to pass a special examination, the questions and problems composing this examination to be as practical as possible. In this way the mere cramming to pass an examination will be relegated to the past. A compass mounted on a compensating binnacle, a lead and line, a pelorus, a sextant, a sounding machine, a patent log and a shadow dial should be purchased and kept in the examining room to make the solution of problems pertaining to this subject absolutely practical. After a preliminary examination the men should be classified temporarily and each class given certain subjects to learn within limited times. Standards for each class and subdivisions could be adopted and the men gradually worked up to those standards, even if years are consumed in doing it. Allowances must necessarily be made for existing conditions, and all changes and requirements made gradual. Each man in each class should be encouraged by the prospect of promotion and an increase in pay for increased efficiency and length of service. Length of service in any one company or in affiliated companies if continuous should count the same. Examinations should be held after the close of navigation and just before the beginning; the latter to reclassify those who have studied during the winter, and the former to learn how far any new knowledge has been put into practice. The classification of men with increase of pay for length of service should be made to induce good men to remain in the employ of one company year after year and to discourage them from joining strikes on peril of loss of continuous service and prospect of promotion. An increase of pay of \$5 a month for each term of five years' service should be of such interest to a man as to steady him in his habits and his work. In addition a continuous-service man would hesitate in joining in a strike when he knew his pecuniary loss would be not only temporary but continuous throughout his service with the association.

While the domain of insurance has no direct connection with navigation it is so intimately connected with the economical management of transportation lines that it deserves a thorough study and some notice here.

It constitutes one of the largest items in the account of running expenses; but at the same time it is one of the safeguards which has been instrumental in building up modern commerce. Campbell, in his excellent book, "Insurance and Crime," says:

"It must be evident to any one who will look at the matter for a moment that modern trade, and, therefore, modern society, would have been impossible but for the development of this great protective art of insurance. Trade has always had her votaries, and among them have been some of the most magnificently daring of mankind. Not merely life, but fortune and reputation, have been risked a thousand times by men who sought only a financial profit as a result of their adventure."

We must take it for granted that some insurance is a modern necessity and then look to the means to gain the greatest benefit from it at the least possible cost. Capt. Froud, secretary of the Shipmasters' Society of London, in an article in the *Forum* of November, 1889, says:

"It has frequently been suggested that the underwriters and

insurance companies who undertake risks on vessels should take some steps to introduce improvements. This is purely visionary. It is quite beyond the province of such people to advise, or to control, the working of ships. The underwriter insures ships in order to make a profit. He summarizes his losses from all causes and from the result deduces a premium by the charging of which he will be able to leave for himself a margin of profit. If for any reason whatsoever the proportion of loss increases, the premiums charged by him are raised proportionately. As a matter of fact, they are now constantly increasing."

Perhaps there is nothing really new in that paragraph; all owners know or suspect the method of averaging adopted by underwriters and can deduce for themselves the conclusion as to who pays this profit in the end. The real point is, do these owners realize that the situation could be improved? Capt. Froud claims that it is purely visionary to expect the insurer to introduce improvements. So it is, as long as there is no competition between underwriters. I understand there is such competition and it may be the direct means of forcing many improvements in all departments in the management of ships. Capt. Froud's article is now nearly four years old and in that time many changes have been made in the business of commerce, especially on the Atlantic coast of the United States. Campbell says on this point:

"It will occur to those not familiar with insurance that, instead of being willing to make good losses due to the negligence or bad faith of the owner or his agents, insurance companies should confine themselves to paying losses due to unavoidable accident. This, in one form or another, is a question that arises in connection with every branch of insurance. Often in practice insurance companies insist that the property insured shall be changed in certain ways before they will insure it. For instance, in fire insurance, it may be conditional that walls between two parts of a building shall be of brick with doors of iron. Insurers might, if they chose, refuse to issue a policy on any ship not built in accordance with certain specifications. The effect of such a method, if intelligently carried out, would be to *lower the loss-rate*. But if competition were free the lowering of the loss-rate would lead to a lowering of the charge for insurance. The result would be that ship owners or the public would be benefited, but insurers would not be benefited. Reason and experience lead many insurance managers to the practical conclusion that it is not their business to *prevent* losses, but to *estimate* the losses, divide the risks into general classes, and charge each risk, according to the average of its class, enough to cover the average loss together with expenses and a profit. This is not always the attitude of insurers. Sometimes they have prescribed the physical condition of the property insured; sometimes they have sought modification of the statute laws under which their business is carried on. When the insurers leave the making of risks to owners and the making of laws to legislatures, and confine their attention to the distributing of losses as they find them under conditions as they exist, they perform completely their function in our economic system."

The fact is insurers today make the hazard conform to the rate instead of the rate to the hazard. When this hazard is reduced to the minimum, through actions either by the owners, insurers, seamen, or the government, then competition will force the rate to conform to it. The owners or the public or both will be the gainers while the insurers will still retain their present profits.

FAULTS OF OVER-INSURANCE.

One of the greatest faults of the present-day system of marine underwriting is permitting over-insurance. This may be done unwittingly, but more probably is due to gross carelessness, a defective system of inspection, or to a well-understood decision to allow over-insurance, and when losses occur to pay them rather than fight the claimants, and then fix subsequent charges accordingly. That there are many underwriters without competent knowledge of the character of the vessels they insure, has been made manifest many times by evidence before commissioners appointed by different governments. It might strike one as strange that an underwriter would venture his capital in a precarious business of which he is comparatively ignorant. Why does he allow over-insurance? Why does he not inspect the property to learn its true value? The same answer may be repeated: He decides it is easier to pay his losses than investigate and fight, and then fixes his charges accordingly.

If a system of rigid inspection was adopted by underwriters the grave fault of overloading would be eliminated from the list of dangers encountered in water transportation. This prevalent practice, which annually is the cause of the loss of thousands of dollars worth of freight, appears more in the nature of taking a gambling chance by the owner or charterer than of criminal negligence or carelessness by him or the underwriter. We must assume that the latter is fully aware of the abnormal condition and takes his chances too; the owner or charterer pays for his temerity, however, in increased insurance rates.

If it were the declared policy of the general government to nurse all subjects connected with water transportation, both foreign and domestic, then many of the faults mentioned above would disappear at once. It is more than questionable whether such a policy is desirable under any circumstances. All business, and especially commerce, will be more economically managed, when left, untrammelled by restricting laws, to follow the roads of least resistance. Numerous laws mean numerous delays, and delays in transportation are usually expensive.

Suppose that such a policy was adopted. It would deal with men and material. In the examination of the men for licenses as masters, pilots and mates radical changes would have to be

made. These examinations might be along the lines suggested above to conform to all practical requirements. It is common notoriety that when a master once gets his license he is practically assured of it for life. What possible good can come of such a practice?

The questions asked applicants on original examinations may be varied enough and apparently thorough. Unfortunately the knowledge of the applicant is usually of that superficial character acquired by "cramming." He obtains his license and that ends his days of study. Of course he soon forgets the little he learned but since he has his license as far as the world is concerned he is a perfectly competent master and pilot. It is well for the public peace of mind that it remains in blissful ignorance of the actual conditions.

Governmental inspections would terminate the practice of overloading and its incidental evils by requiring each vessel to be marked not only for her deep load line but for "going light;" and over-insurance would cease when "open" policies became the rule and not the exception, and "valued" policies were declared illegal.

Capt. Froud says: "The public are told that losses are unavoidable and they do not understand that the majority of accidents are due to preventable causes. Ships can be built on good plans, of good material and by good workmen; and can be so laden as to insure freedom from loss by storms, save under highly exceptional circumstances. * * * A good deal of the recklessness and apathy shown by ship owners and speculators is to be accounted for by the possibility of insuring in full against loss of ship, cargo, and even unearned freight."

In a report of the commission appointed by the British parliament to investigate the causes of the increasing number of marine disasters, the fact is emphasized that a large proportion of the casualties at sea are to be ascribed to preventable causes other than faulty construction, insufficient repairs and overloading of ships; and illustrates this by quoting figures to show that over a long period of years comparatively few vessels were known to be lost from defects in the vessel or stowage, but a great many were lost from neglect or bad navigation. At the same time, in dealing with marine insurance the commissioners say that the system, while it protects ship owners against losses which would otherwise be ruinous, also tends to render them less careful in the management of their ships. The statement is even made that the system of over-insurance is largely due to the custom of appointing incompetent persons as masters and pilots of ships.

To prove to the reader that the suggested reforms are not impracticable I would refer him to the system of inspection of the British government in the transportation of government stores of every description to India. No chances whatever are taken about a vessel, her cargo, or crew. The vessel herself is rigidly examined from stem to stern and from keel to truck. The classification of the underwriter is not recognized. A certain latitude is allowed in fixing the load line. And only the very best masters and pilots are employed after passing the most thorough and practical examination.

And what is the result of this organized system of inspection? In twenty-two years, averaging 200 vessels a year, there were but two casualties to two vessels—one due to fire and the other to dismasting in a hurricane—without the loss of a single soul. "Do you mean," was asked of Edward Ritherdon, surveyor of shipping to the secretary of state for India, "all these other vessels, averaging 200 a year, arrived safely?" "Yes," he replied, "I am not aware of any loss at all." Can it be doubted that such a system would be of inestimable benefit to lake commerce? It would mean hard, continuous work in the beginning to down opposition from all quarters, but it would be a work, when fully systemized, that would appeal to all classes pecuniarily interested in lake transportation. The Lake Carriers' Association is logically the body to take the initiative; moreover its members would be the ones to reap the first fruits of any system looking towards the improvement of men and material. Increased efficiency of the men holding responsible positions on their ships will decrease the chances of disaster or loss from delays, collisions, groundings, and the elements. Any means by which water transportation can be more economically administered should appeal to individual owners as well as large corporations. Shrewd business men know that many dollars are saved annually by systematizing their business. The great Steel Corporation was formed with this one of the ends in view. Indeed, the Lake Carriers' Association owes its own life to the acknowledged necessity of an organization of owners to solve the innumerable problems concerning freight rates and labor. Let it go a few steps further and reap the benefits, with its men, of a mutual and more complete system of organized co-operation.

Shares of the Consolidated Lake Superior Co. have touched the lowest level in their history. At the low figures reached they show a shrinkage of \$48,000,000 as compared with the high market level. The outstanding stock amounts to \$74,000,000 common and \$28,000,000 preferred. The preferred dropped to 5 and the common to 1. The present value of the stock is therefore \$2,080,000 as against \$40,710,000 of two years ago. This precipitous decline would seem to indicate that President Shields' efforts to secure \$12,000,000 from the stockholders to save the company from foreclosure have not met with the success expected.

Rear Admiral George W. Melville, U. S. N., retired, will hereafter make his home in Philadelphia where his two married daughters live.

AMERICAN MERCHANT MARINE.

New York, Aug. 5.—I find when an American ship builder is approached for an expression of opinion regarding the state of American shipping on the high seas and to suggest a remedy for its present deplorable state, he looks grave, and while bewailing the state of affairs is loath to suggest a plan for the redemption of the merchant marine of the United States. This is owing, in a great measure, to modesty—for, be it known, the average ship builder is modest. He shrinks from rushing into print to air his views, for fear the public will look upon anything he might say as being prompted by self interest. However, he is very much aware of the fact that something will have to be done for the aid of our ocean-going ships, of which at present we have so few that they are scarce worth counting in estimating the merchant marine of the world.

"Yes," remarked one when interviewed on the subject, "Congress will have to do something for the American merchant marine or it will soon be a thing of the past. Any measure that will bring relief will be welcomed by the ship builder and ship owner. All we ask is that a start be made toward regaining the ocean carrying trade enjoyed by this country for several years prior to 1861. The public should be educated to the fact that anything that will help our shipping trade will benefit the country at large, by enabling us to keep the profits derived from ocean freights at home instead of paying it to foreigners as is the case at present. A great many people when they read a statement of our imports and exports, which on the face shows a balance of trade in our favor, do not look further but exclaim 'Why we're doing well enough! The balance of trade is in our favor. Here it says so in figures, and figures don't lie.' But the trouble is, all the figures are not given. The immense amount of freight paid to foreign ships for carrying our products to distant countries and those countries' products to our ports is left out of such statements. Were they shown it would be seen that; as a matter of fact, the balance in a great many instances would be against us instead of in our favor, thus making us the debtor nation, and it does not require a great degree of commercial sense to understand that the debtor is always at the mercy of the creditor. This question should be agitated until the public becomes educated to the true status of affairs, when there will no doubt be a general demand throughout the country that Congress pass some measure that will place American shipping on an equal footing with that of other nations."

The president and general manager of a steamship line, who by the way would only be benefitted from a general standpoint by increase of American shipping, when approached on the subject, said: "If we are to take the place in the world as befits such a nation as ours, that is, to increase in importance among the nations of the earth and become a world power—of which we hear so much talk—a power for good in all that tends to the betterment of mankind and a continuance of prosperity for our own country, we must do our own ocean carrying. As matters now stand, we rank away down at the foot in a commercial sense, carrying less than 10 per cent. of our exports and imports, and this too when we are the greatest purchasing nation on earth for direct consumption. We are really an extravagant nation and our citizens according to their station in life live better than any other people on earth. And yet, with all our boasting of superiority over what we are pleased to term the waning monarchies of Europe we place ourselves in their hands, subject to their beck and call, by allowing them to do almost all of our ocean carrying, which by all natural laws of trade rightfully belongs to us and should be done by us. Were we to do our own ocean carrying then would trade follow the flag. We hear a great deal about the need of a strong navy. One reason given for a strong navy is that we should have it to protect our commerce on the high seas. This reminds me of the retort of an old farmer down in Georgia, who was being sued by a doctor for attendance on his wife, who had died under the doctor's ministrations. The farmer plead his own cause and in addressing the jury denounced the doctor as a quack, to which the M. D. took exception and rising in his seat shouted: "Ask my patients if I am a quack!" The granger, addressing the jury, vehemently retorted: 'He says ask his patients. Think of it gentlemen. He haint got none, they're all dead!' That is the present status of our merchant ships on the high seas—'we haint got none.' Our merchant marine is dead, and as a consequence we are dependent upon and compelled to pay tribute to foreign ships. This being the case we would be in a sorry plight were a European war to break out between nations that do our ocean carrying. In such a case not only would freight rates become exorbitant by ships becoming scarce, but the American shipper would be compelled to take all the risk of carriage as well. This would work a hardship on the producer, who would be forced to bear a large share of the burden in the way of lower prices for his products. It is the producer, after all, who has to 'pay the freight,' and the sooner he recognizes this fact the sooner will he understand that what is good for American shipping is good for the American producer. I think when this question is really understood by the people of the United States a change for the better will be wrought. The press of the country, if it will, can help along the good work of educating the public in this matter as no other force can. I trust the question will be taken up and agitated until congress will see the necessity of doing something for the good of the American merchant marine and thereby for the country at large."

The president of a New York trust company, who has given the subject considerable study, expressed himself in favor of a limited subsidy: "I believe," he said, "that a subsidy for Ameri-

can steamships that would carry our mails on the ocean would be a move in the right direction. Make the subsidy sufficient to overcome the difference in cost of operation between American and foreign ships, and make it applicable to steamships of moderate speed. By so doing a start can be made towards placing the American merchant marine where it properly belongs, in the lead among ocean carriers. It goes without saying that a merchant marine is a bulwark of strength in peace or war to any maritime nation, and hence it should be encouraged to the fullest extent commensurate with sound government principles. As it is at present we really have no merchant marine. We are compelled to depend upon foreign ships for ocean transportation, both as to freight and passengers. This being the case it is but natural that the American merchant cannot expect to cope with his European rival in seeking outlets in the way of new markets for his wares. He is at the mercy of the foreign ship owner, himself, in many instances, a rival merchant, who will give the American a show when he can't supply the demand himself. It is surely a very humiliating state of affairs for a nation like ours to be made dependent for its commerce on others and the others keen rivals for the trade of the world. The time seems ripe for a change of these conditions and I think whatever we may pay out in fostering our merchant marine will come back to us with compound interest. To have an efficient merchant marine means having the markets of the world at our hand; means having an outlet for our surplus manufactures, which from present indications will soon be upon us in much greater quantity than we can consume. To allow this to occur would mean stagnation in business, and the first to be affected and afflicted by such a state of affairs would be the farmer and artisan who are the mainstay of the country. It is to be hoped that the producers of the United States will soon come to see this question in a proper light and realize that government aid to American shipping means aid to them. It means prosperity for them, and it does not require a student of political economy to recognize the fact that prosperity for the producers means prosperity for the whole country, for we all know that whatever affects the production of a country, either for good or ill, is almost immediately felt by the commercial world, which is always dependent upon the producer. At the same time whatever retards the commerce of a country is reflected upon the producer in the way of less demand and lower prices for his products. I think when the country understands this question aright there will be but one voice in the matter of aid to American shipping, and whether that aid shall be in subsidy, differential rates or otherwise let our political economists decide."

A member of a prominent New York shipping house, which owns and operates a line of American freight steamers between New York and European ports, and which, I am informed, is also interested in ships sailing under the British flag, when asked for an expression of opinion regarding the needs of American shipping said:

"American shipping is at a disadvantage both as to the cost of ships and their maintenance. As to the difference in cost of building ships in the United States and Great Britain, I am led to think from observation that it is not all due to the higher wages paid the ordinary laborer in America—that is the men who work with their hands. British ship builders are better equipped in what may be called preparedness and in handling their working forces to advantage. The British ship builder goes on the principle that it pays to employ brains and to pay well for them. As a consequence such officials as superintendents and heads of departments command better salaries there than obtained in American ship yards. I call to mind the case of a foreman of the foundry of one British yard who received the neat sum of \$17,000 a year for his services. Of course he is rated one of the very best foundrymen in the kingdom, but I very much doubt if any foundrymen in the employ of any American ship yard, be he ever so efficient, is paid anywhere near such an amount for his services. Then the workmen in British yards are, as a rule, permanent fixtures, son following father in the yard's employ for generations. This custom obviates one difficulty which continually confronts the American ship builder, who is too often compelled to seek new employes from season to season or from job to job. As to wages paid in British yards, I was surprised to learn at one yard I visited, while lately abroad, that many of the workmen averaged—working piecework—over \$5 a day. This piecework method seems to give brain a chance to assist brawn and enables the most clever workman to earn the biggest pay. It is an indirect recognition of brains, as high salaries to salaried officials is a direct one. As to the operation of ships under the British and American flags, there is no question but that the former has the advantage in cost. This I think is in a great measure attributable to Great Britain's policy toward her merchant marine. Her free trade policy is a benefit to her shipping interests. This policy is extended even to the crews of British ships, from the captain down. The British ship owner, outside the owners of regular passenger liners, cares not a rap who mans his vessel so long as he makes a profit. You see he keeps an eye on the main chance all the time. I have known American citizens to be in command of British ships, and hold their American citizenship, and I have even known a full-blooded negro to be in command of a British vessel carrying a white crew. It is the end that the British trader keeps in view, the means being a secondary consideration. He is no doubt the shrewdest trader on earth today and owes his supremacy on the high seas more to that fact than to his prowess in war. Then the British people recognized the fact that it is commerce that has made

and sustains them and therefore laws are framed and acts passed for the encouragement of shipping. Our statesmen might gain some knowledge by studying British methods and thereby enact some measure of relief for our languishing merchant marine."

Our conversation then took a general range and drifted into the subject of immigration to the United States, a subject at present of vital interest to New Yorkers, when he remarked: "I have just been reading in a government report lately received from Washington section 151 of our emigrant laws, from which I note that the master of a ship bringing emigrants to this country is taxed \$10 a head for every emigrant that dies aboard ship on the voyage to the United States, while we let in the offscouring of the old world, if they get here alive, for a few cents a head." Of course we understand that the \$10 tax is put on dead ones in order to cause the ship master to keep his vessel in a good sanitary condition, but I think it might be well to consider, in this connection, the sanitary condition of this country, especially in a moral sense, and place a restriction on immigration that will keep out undesirable people.

G. W. RAMAGE.

ITEMS OF GENERAL INTEREST.

Arthur Scranton, superintendent of the Lackawanna Steel Co. has resigned. Mr. Scranton is a brother of Walter Scranton who is the head of the plant.

Secretary Cortelyou announced last week that Herbert Knox Smith had been appointed deputy commissioner of corporations in the department of commerce and labor. He was graduated from Yale in 1891 and has practiced law in Connecticut.

Capt. J. C. Sanford, government engineer at Philadelphia, is advertising elsewhere in this issue for bids for the construction of a steel, twin-screw suction dredge for use in Savannah harbor in Georgia. Bids will be opened by him at noon Sept. 5.

An order was cabled to Admiral Cotton at Lisbon last week detaching the Chicago from the European squadron and directing her to sail Saturday for New York. The vessel will be extensively repaired at the New York navy yard and then will replace the New York as flagship on the Pacific station.

The ninth dividend of \$1.75 per share on the preferred stock of the United States Steel Corporation, payable Aug. 15, will go to 34,938 shareholders. This is an increase in the number of shareholders and would indicate that the recent heavy decline has caused small holders to buy it as an investment.

The annual report of the Compagnie Generale Transatlantique (French Line) for 1902 gives the total receipts, including bounties, at \$9,938,951.31, against \$9,533,440.68 for the preceding year, an increase of 405,510.63. The total expenses for 1902 were \$8,842,531.61, a decrease of \$113,923.40 as compared with 1901. The excess of receipts over expenses, amounting to \$1,096,419.71 were appropriated for the amortization of the fleet and the construction of new vessels, no dividend being declared.

Directors of the Dominion Iron & Steel Co. and the Dominion Coal Co. have decided to cancel the existing lease and to conduct the two companies in future as separate and distinct concerns. It is understood that the steel company has, through this agreement, been able to make provision for the completion of its plant by the erection of finishing mills.

When the Detroit Ship Building Co.'s dry dock was pumped out to admit the steamer China last week about 2 tons of German carp were found in it. As a rule dry docks are not fishing nets, but in this particular case the reason is simple. The carp had followed the Craig into the dock, being attracted by the smell of her decaying cargo of corn. Those employees and neighbors who are fond of carp had a feast.

Maj. W. L. Marshall, United States engineer in charge of river and harbor improvements in New York, recommends in his annual report an appropriation approximating \$1,500,000 for the fiscal year. In discussing next year's operations he estimates that 8,000,000 cu. yds. of dredging should be done in Ambrose channel and says that from 2,500 to 3,000 ft. of sea wall should be constructed at Governor's island. He wants \$400,000 for Ambrose channel, \$226,000 for Bay Ridge and Red Hook channel and \$200,000 for the sea wall at Governor's island.

The problem of how to prevent the further depletion of the lobster industry appears to have been successfully solved. The lobster has become commercially extinct, save in the coast waters of the maritime provinces. Even there they are much less numerous than formerly and only the wise precautions of the Dominion government have prevented their extinction. The establishment of close seasons, artificial propagation and the prohibition of taking spawn lobsters have to some extent been effective. The latter provision proved impossible of enforcement. This year the experiment was tried of buying the spawn lobsters of the fishermen and impounding them in a large water enclosure to be liberated at the opening of the close season to propagate in the natural way. The experiment has proved a perfect success, the adult lobsters being in perfect condition, the eggs being in all stages of development and the waters of the pound teeming with vigorous lobster fry.

TRADE NOTES.

An order has just been received by the Atlantic Works Incorporated of Philadelphia for one of the bevel band sawing machines to be shipped to the Ollinger & Bruce Dry Dock Co., Mobile, Ala.

The Engineering Co. of America, with headquarters in New York, has issued a neat folder, explaining in detail the work it does and its methods and facilities, also giving a partial list of the engineers in its employ. By systematizing and specializing the company claims that it produces the best results in all kinds of engineering work at reasonable cost.

BELLEVILLE WATER-TUBE BOILERS

NOW IN USE (FEBRUARY, 1903)

On Board Sea-going Vessels, NOT INCLUDING New Installations Building or Erecting.

French Navy	-	-	-	-	-	-	-	276,460	H. P.
English Royal Navy	-	-	-	-	-	-	-	849,300	"
Russian Imperial Navy	-	-	-	-	-	-	-	193,900	"
Japanese Imperial Navy	-	-	-	-	-	-	-	122,700	"
Austrian Imperial Navy	-	-	-	-	-	-	-	32,900	"
Italian Royal Navy	-	-	-	-	-	-	-	13,500	"
Chilian Navy	-	-	-	-	-	-	-	26,500	"
Argentine Navy	-	-	-	-	-	-	-	13,000	"
The "Messageries Maritimes" Company	-	-	-	-	-	-	-	87,600	"
Chemins de fer de l'Ouest: (The French Western Railway Co.)	-	-	-	-	-	-	-		
plying between Dieppe and Newhaven	-	-	-	-	-	-	-	18,500	"
Total Horse Power of Boilers <u>in Use</u>	-	-	-	-	-	-	-	1,634,360	

WORKS: Ateliers et Chantiers de l'Ermitage, at Saint-Denis (Seine), France.

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SHIP BUILDING IN THE UNITED STATES.

The Introduction to the Blue Book of American Shipping Presents a Careful Review of the Situation.

The Blue Book of American Shipping is just from the press of the Marine Review Publishing Co. The Blue Book is the standard marine directory of the United States and is now in its eighth year. It is also a statistical publication of waterborne commerce and as such has grown in value annually. Some of the statistics contained in this book, especially those which have to do with the commerce of the great lakes, are priceless. For those who wish to reach the great marine trade of the United States the Blue Book is an invaluable directory. It is a working directory of every industry allied to shipping and ship building, and especial pains have been taken to make it accurate. One of the features of the Blue Book is an introduction in which is carefully reviewed the condition of shipping and ship building throughout the United States. The introduction is, of course, the result of a year's observation. This year's introduction is as follows:

Not a single contract has been let for a vessel for the foreign trade of the United States during the past two years. Here is a country whose exports are unrivaled among the nations of the earth without a single ship ordered for two years to carry away its freight. Could any one thing demonstrate more clearly than this the need of government aid for shipping? Why is this feature of our trade neglected? The ability to make things to export is aided by a tariff. Why not the carrier itself? Space in a ship is a commodity. It is something made to sell. The statistics of our export trade would be vastly enriched if there could be added to them the freight earned in transporting the goods.

Except on the great lakes, where the industry is peculiarly a special one protected by the coasting regulations, there is little encouraging to report regarding ship building in the United States. Orders have become like the proverbial visits of the angels—few and far between. During the fiscal year ended June 30 last 1,530 vessels of 456,076 gross tons were built in the United States, compared with 1,657 vessels of 473,981 gross tons for the previous fiscal year. Vessels now under construction indicate a further lessened output for the coming fiscal year. The principal decrease for the past year has been in steel steamers built on the great lakes, which number forty-one of 131,600 tons compared with fifty-two of 161,797 tons for the preceding year. The previous year was the one of greatest output in the lake district. On the seaboard eighteen ocean steel steamers of 101,471 gross tons were built—the largest output of this type in our history. Think of it. Eighteen ocean steel steamers in this continent, covering a country with 70,000,000 of souls. Nor were these all for overseas trade. Far from it. Only five of them can properly be credited to that service—the Finland for the Red Star Line, the Massachusetts, Mississippi and Maine for the Atlantic Transport Line and the Siberia for the Pacific Mail Steamship Co. The Red Star and Atlantic Transport lines are now controlled by the International Mercantile Marine Co. All these ships were ordered over two years ago and there have been no new orders to fill the places left vacant on the stocks.

A few contracts have been received by the coast ship yards for some splendid vessels for the coastwise service. These include the side-wheel passenger steamer and a freight steamer for the Fall River Line, the former to cost \$1,000,000 and the latter \$400,000, and both to be built by the Fore River Ship & Engine Co., Quincy, Mass.; a 400-ft. passenger and freight steamer for the Mallory Line of New York and a similar vessel for the Ocean Steamship Co. of Savannah, both to be built at the Roach Ship Yard, Chester, Pa.; a 300-ft. steamer for the Clyde Line, to be built by the Cramps of Philadelphia; a steamer for the Eastern Steamship Co., to be about 350 ft. long, two steamers for the Ericsson Line, each 203 ft. long, all to be built by the Harlan & Hollingsworth Co., Wilmington, Del.; and four dredges for government service to be built by the Maryland Steel Co., Sparrow's Point, Md. These embrace all that are of any importance.

It might be pertinent to state, since so many laymen appear to be ignorant of it, that the coastwise trade of the United States and the foreign trade are two different things. The coastwise trade, meaning trade between United States ports, is a protected trade. Vessels of other flags may not engage in it. The past four years have marked a distinct revival in ship building for the coastwise trade but the crest appears to have been reached, for new orders are not forthcoming. The novelty of the coasting trade during the past year has been the construction of the seven-masted schooner Thomas W. Lawson.

Since the Spanish-American war naval contracts have been well distributed among the coast ship builders. During the year contracts for four battleships, two armored cruisers and two gunboats have been given to them. Contracts for two more battleships are about to be given, and in addition the New York navy yard is building one battleship. Forty-one warships are at present under construction, representing a displacement of 338,948 tons, a total horse power of 415,500, and costing for hulls and machinery \$90,314,516.

During the year the United States Ship Building Co. was formed to take over the plants of the Union Iron Works, San Francisco; the Bath Iron Works and Hyde Windlass Co., Bath, Me.; the Eastern Ship Building Co., New London, Conn.; the Harlan & Hollingsworth Co., Wilmington, Del.; the Crescent Ship Yard, Elizabethport, N. J.; the Canda Manufacturing Co., Carteret, N. J., and Samuel L. Moore & Sons, Elizabethport, N. J. Later the plant of the Bethlehem Steel Co. was added, Mr. Charles M. Schwab transferring it to the ship building company

though retaining an issue of \$10,000,000 in bonds as an exclusive lien upon the property. In addition he received \$20,000,000 in stock, equally divided between preferred and common. It was soon found that the ship building company was capitalized far beyond its tangible assets and earning power, though the subsidiary plants themselves were in a thoroughly healthy condition. The inevitable result was failure to meet the fixed charges upon its sheaves of securities and the court was under the necessity of nominating a receiver for it. The unfortunate plight of this company is no reflection whatever upon ship building as a thoroughly sound and excellent business; it is merely another evidence of the folly of supposing that values are created by artificial means. A plant is worth no more than it can earn.

A foreview of ship building on the great lakes does not show many orders in abeyance. A year ago the ship yards were filled up with orders for a full year ahead. But that is not the case now. The lake ship yards, broadly speaking, are now well up with their work. If they had to do so they could probably turn out all orders on hand within six months. Those best informed, however, do not take a dubious view of things on the great lakes. The industry, as stated before, is special; the ships are not like other ships; the shipping is not like other shipping; it is not made up of a multiplicity of things as is ocean carriage, but is confined to a few items in bulk; these items are likely to continue to be moved for years in a constantly ascending scale and ships will continue to be built to carry them. Moreover, a fair part of existing tonnage on the lakes is wooden; it is old and decaying and must go the way of all craft; and it must be replaced by new and more modern carriers. Thus ship building on the lakes for many years is assured, although the number of orders for the coming year will fall considerably short of the business of any of the past three years.

SHIP BUILDING DURING JULY.

The bureau of navigation reports that 117 vessels of 25,460 gross tons were built in the United States and officially numbered during July. The three largest steel steamers included in the list are the Saxona, Wilbert L. Smith and City of South Haven, all built on the great lakes. Following is the classification:

	WOOD				STEEL, ALL		TOTAL	
	SAIL		STEAM		STEAM*			
	No	Gross tons	No	Gross tons	No	Gross tons		
Atlantic and Gulf	25	1,849	32	1,173	3	905	60	3,927
Porto Rico								
Pacific	2	80	15	1,626			17	1,706
Hawai								
Great Lakes	2	20	15	288	9	18,094	26	18,412
Western Rivers			14	1,415			14	1,415
Total	29	1,949	76	4,512	12	18,999	117	25,460

*No steel sailing vessels were built in July.

At the meeting of the general policy board, held in Washington last week, Admiral Dewey was made president. There was a general discussion of the subject of coaling stations and naval stations in Cuba with a view to determining whether they should be garrisoned by the army or marines. Secretary Root has already taken steps to place troops at Guantanamo and Bahia Honda and some of the naval officers are not well pleased with his action. Secretary Root, by invitation, briefly addressed the board, saying that he believed good results would come from its deliberations on questions affecting both branches of the war force of the nation and that a joint board was better than routine official communications.

As announced in a recent issue of the Review the Maryland Steel Co., Sparrow's Point, Md., will build the two suction dredges for the great lakes. The bids received by Capt. J. C. Sanford, government engineer at Philadelphia, were as follows: The Bucyrus Co., South Milwaukee, Wis., \$235,933 each; John H. Dialogue & Son, Camden, N. J., \$242,000 each; Maryland Steel Co., Sparrow's Point, Md., \$165,000 each; Great Lakes Engineering Works, Detroit, Mich., \$200,000 each. The Maryland Steel Co. promises to deliver the dredges in eleven months. The company wants \$4,750 extra for delivering the dredge at Cleveland and \$5,000 extra for delivery at Milwaukee.

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OFFICIAL REPORT OF KEARSARGE'S RUN.

On Saturday last the navy department received from Capt. J. N. Hemphill the official report of the record run of the battleship Kearsarge. The report, which is of great interest because the performance of the Kearsarge was very unusual, says:

"From the beginning to the end of the journey we encountered head winds, head seas and head currents, and were further handicapped by a gale, and later by icebergs and a dense fog while in their neighborhood. The total distance to run from the Needles to Mount Desert Rock was 2,885 miles. Mount Desert Rock was reached in the midst of a dense fog at 12:45 in the afternoon, Sunday, July 26, thus making the actual running time, allowing for the difference in longitude, 9 days 4½ hours. This gave an average speed of 13.1 knots per hour for the total run. Had she been going to the eastward with wind, sea and current, instead of to the westward, she would undoubtedly have averaged 14 knots, for the average revolutions per hour of the engines would have given her in still water 13.6 knots per hour. The head wind varied from a force of 2 to 6 every day, except two, and on one day, that of the gale, the force was estimated at 8. In this gale green seas washed over the forward turret, when it became necessary to slow down, although the engines were behaving beautifully and also the ship herself. This reduced speed was maintained for 4 hours.

"Shortly after starting on the first day out, from 1:30 to 2:10 p. m., the port engine was slowed for a hot bearing. In the fog and among the icebergs above referred to, the ship was slowed to 10 knots for 10½ hours. The first berg, quite a large one, was sighted about 5 o'clock in the afternoon on the 23rd. Fortunately at that time the weather was quite clear, and I carefully noted the water temperature as we approached. When within 2 miles of the iceberg the temperature dropped 9°. At 6 o'clock this iceberg was abeam, distant about one mile to the southward, latitude 42° 42' north, longitude 48° 06' west. Shortly afterward a dense fog set in and continued through the night, and as the changes of the water temperature showed that we were passing in the vicinity of ice several times in the night, I deemed it necessary for the safety of the ship to slow down to 10 knots, as the fog was so dense that it was impossible for the greater part of the time to see a ship length ahead. As soon as I felt that we were clear of ice regions I went ahead full speed, although the fog was as dense as ever."

TEN YEARS GROWTH IN EXPORTS.

Editor Marine Review:—In 1893 fiscal year our total exports amounted to \$847,000,000, and in 1903 to \$1,420,000,000, an increase for 1903 over 1893 of \$573,000,000. By world divisions the comparative figures are as follows:

	1903.	1893.	Increase per cent.
Asia	\$ 60,000,000	\$ 16,000,000	275
Oceanica	36,000,000	11,000,000	230
North America	215,000,000	119,000,000	80
Europe	1,000,000,000	662,000,000	60
South America	41,000,000	32,000,000	30
Africa	38,000,000	6,000,000	533

While exports to Africa lead immensely in percentage of increase in 1903, allowance must be made for the peculiar conditions in South Africa, where nearly all our trade lies, owing to the Boer war. The real point of encouragement in these figures is the gain of 275 per cent. in export to Asia, and 230 per cent. in exports to Oceanica. Can we not fairly attribute those large increases to the favorable position and prominence we have obtained in Asia and the orient by reason of our acquirement of the Philippines? It is certain that the increases in question cannot be attributed to a prominence of American trading ships in those waters. Take China and Japan, apart from the other countries of Asia and the orient, and we have:

	1903.	1893.	Increase per cent.
Japan	\$21,000,000	\$3,000,000	600
China	19,000,000	4,000,000	375

But figures for China are not complete without they include exports to Hong Kong, which is really a port of primary entry

for China. The Hong Kong figures are: 1903, \$8,000,000; 1893, \$4,000,000; increase, \$4,000,000, or 100 per cent.

This 100 per cent. increase is not as encouraging as it looks, as our exports to Hong Kong were only \$8,000,000 since 1899. What is the reason? Is it not because American trading vessels are so seldom seen in the port of Hong Kong? Hong Kong is busier today than ever before, but we are not getting our proper share of the increased and increasing trade of that busy port. No increase for five years in American trade with that gateway of British commerce in the orient is discouraging.

Referring to China and Hong Kong the figures given us by the department of commerce and labor, through its bureau of statistics, are:

	Exports to China.	Exports to Hong Kong.
1893	\$ 3,900,457	\$ 4,216,602
1899	14,493,440	7,732,525
1900	15,259,167	8,485,878
1901-1902	35,128,740	16,039,957
1903	19,000,000	8,000,000

The exports to China show steady, though not large increase. The years 1901 and 1902 must be reckoned together and averaged, owing to the disturbance of trade conditions on account of the Boxer troubles.

We are progressing in the development of our trade in the far east without an appreciable American merchant marine sailing those waters and advertising American goods every time the stars and stripes are seen flying at the masthead of American vessels in the ports of Asia and the orient. But with such vessels and plenty of our smart "Yankee drummers" regularly visiting port after port, our oriental trade would increase by leaps and bounds. On the Pacific and in the far east lies the future of American foreign commerce.

WALTER J. BALLARD.

Schenectady, N. Y., July 30.

UNITED STATES SHIP BUILDING.

To build a craft the bankers and the shipwrights did assume,
On modern Wall street lines it was designed;
The bankers were to furnish the largest sort of boom,
And a sale-plan of the most expansive kind.

Now, many a craft the shipwrights skilled had fashioned in their time

That sailed the stormy seas without mischance,
From Greenland's icy mountains to India's coral clime,
But—it's different on the seas of high finance.

And the bankers oft had rigging done—too often, it would seem,
The dearth of raw material was such;
For the timber left for making booms was scarce in the extreme,
And their canvas(s) didn't promise very much.

They launched the ship; alas! instead of floating proudly, she
Just simply sank; the waves inglorious hide her:
And the reason for her sinking was (the critics all agree)—
Within she had more water than outside her!

—Boston News Bureau Poet.

The Carley Life Float Co., New York, announces that it has sold one of its largest floats to Balmer's bathing beach at Coney island. The float measures 9 by 14 ft. and will safely accommodate forty-five persons. The float was installed by Capt. Riley, champion swimmer, who has charge of this resort and who is always on the lookout for appliances to render deep-sea bathing safe.

Miss Mary B. Bixby, a former resident of Skowhegan, Me., now living in Casadena, Cal., has written to Gov. Hill telling him that she has found in California a document of historic value to Maine. It is said to be the first commission issued to a lighthouse keeper in this country, bears the signature of George Washington, and appoints Joseph Greenleaf keeper of the light at Portland Head.

Towing Machine for Sale.

For Sale—One Shaw & Speigle towing machine, latest type; size of cylinders 12x12. Hawser 5¼ in. Placed on board ship but never used. Cost one year ago \$2,500. Address for further particulars and price, James Reilly Repair & Supply Co., 229 and 230 West street, New York City. Aug 6

Small Steam Barge for Sale.

I have for sale a small steam barge Carries 250 tons. Address, Capt F. E Wood, Alexandria Bay, N. Y. t f



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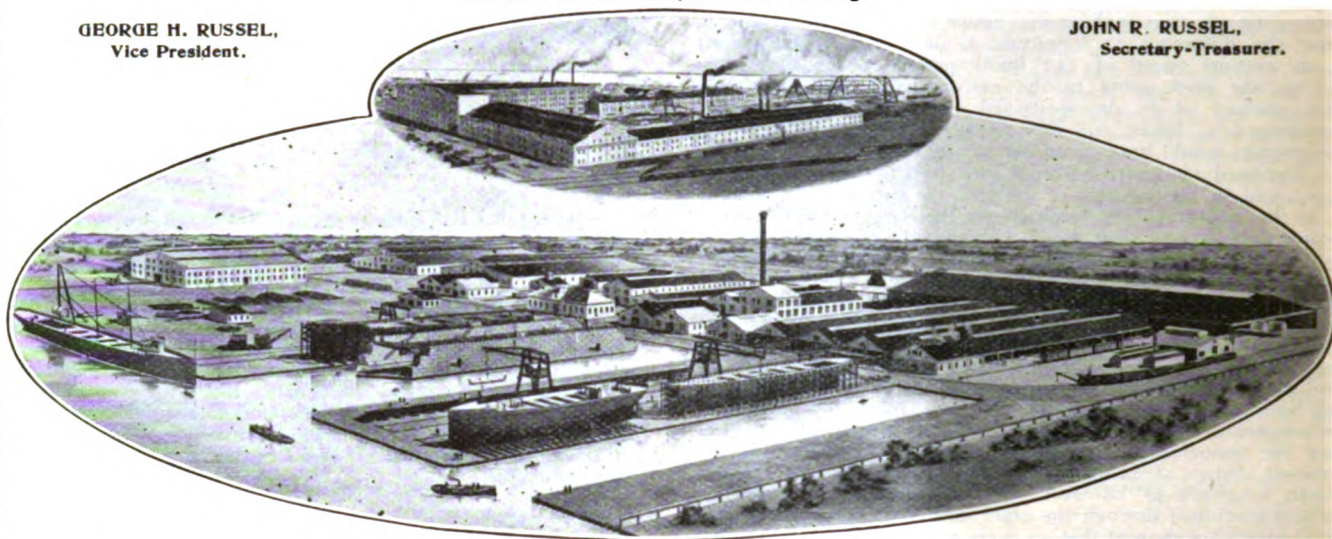
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No. 6.

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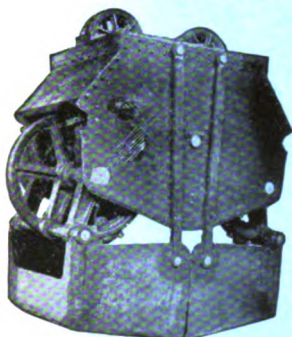
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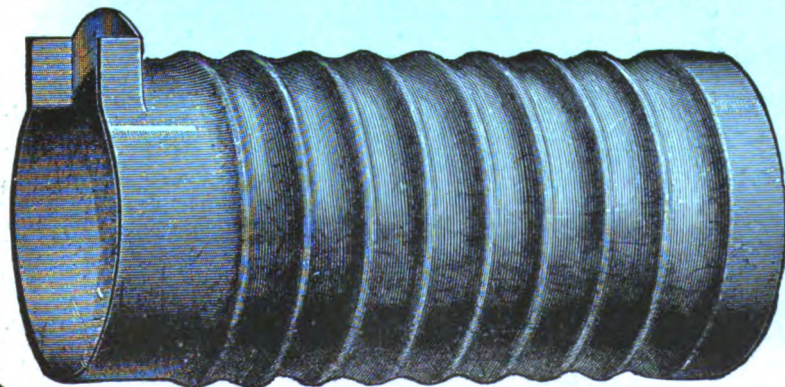
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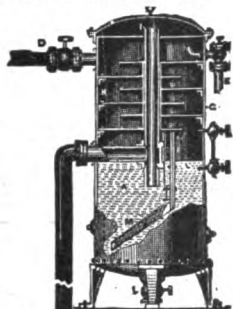
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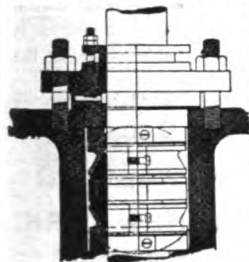
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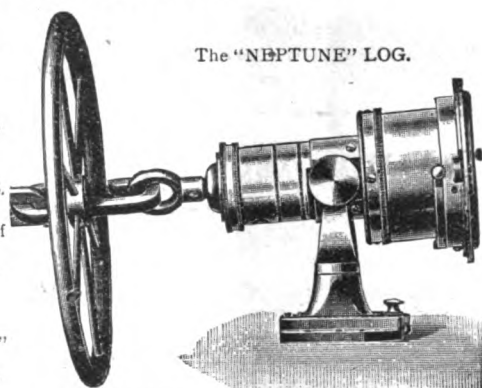
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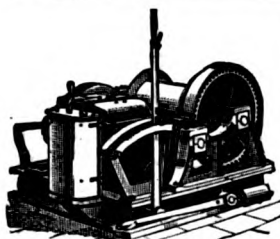
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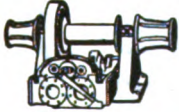
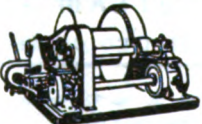
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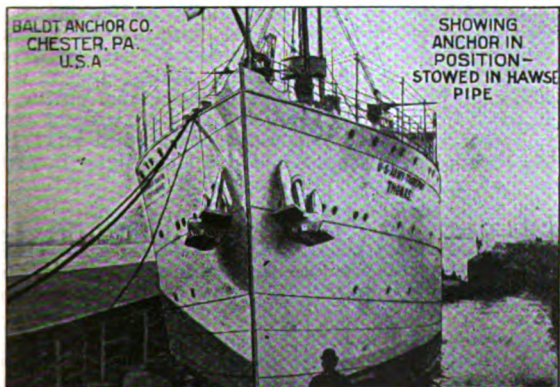
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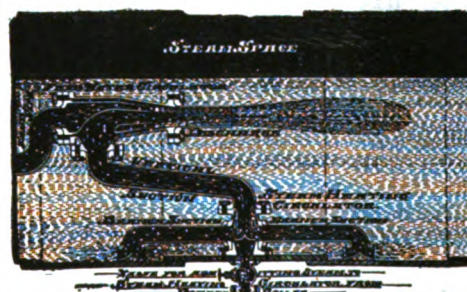
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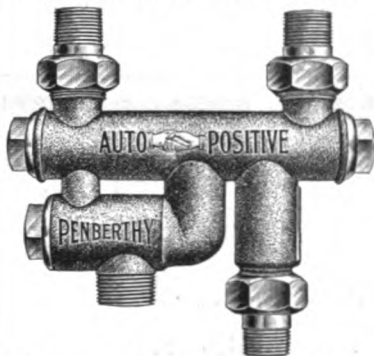
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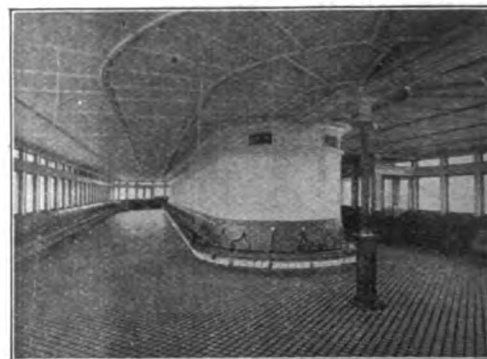
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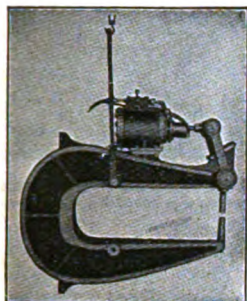
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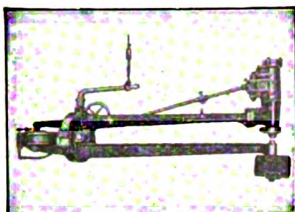


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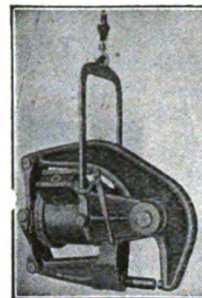


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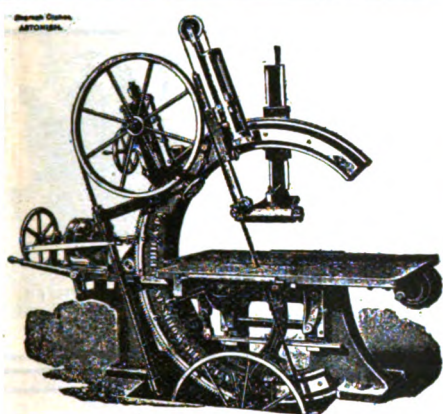
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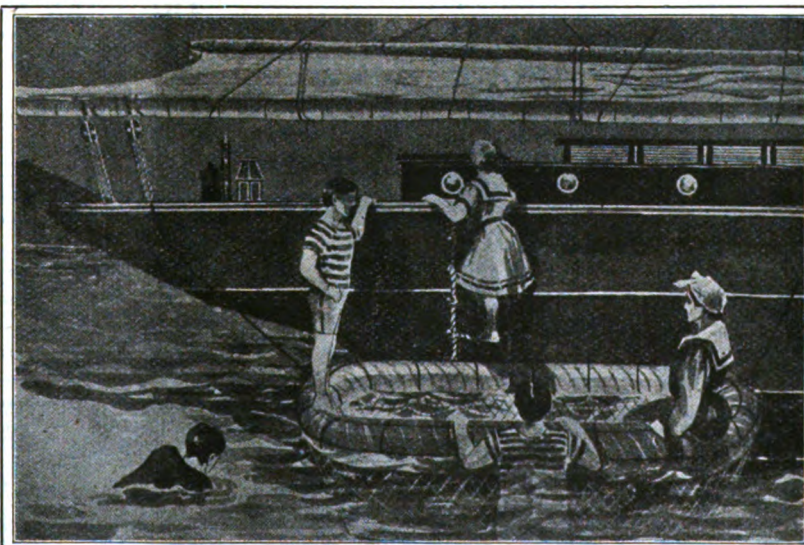
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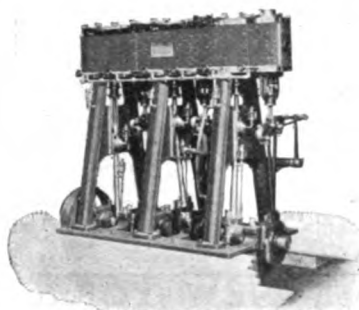
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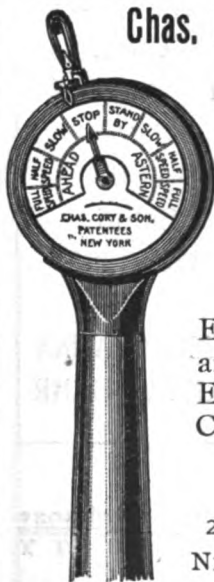
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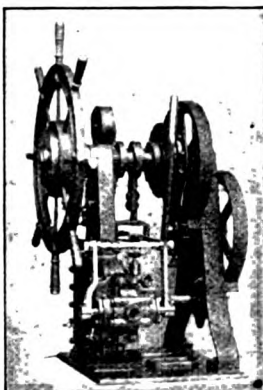
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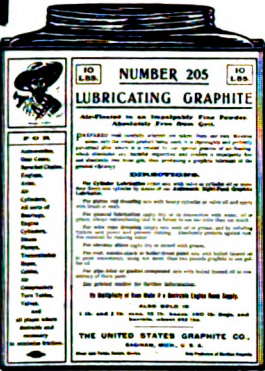


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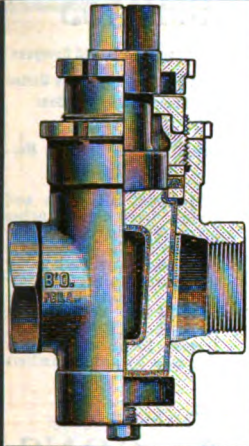
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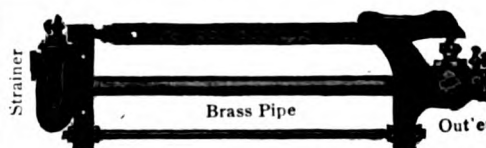
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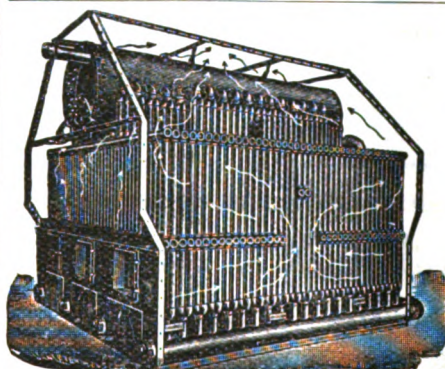
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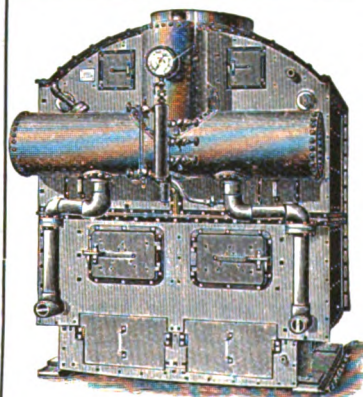


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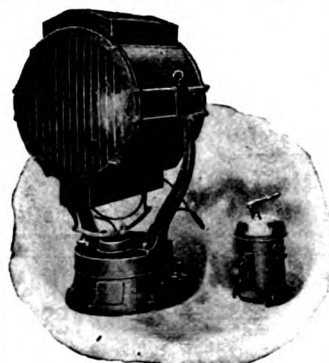


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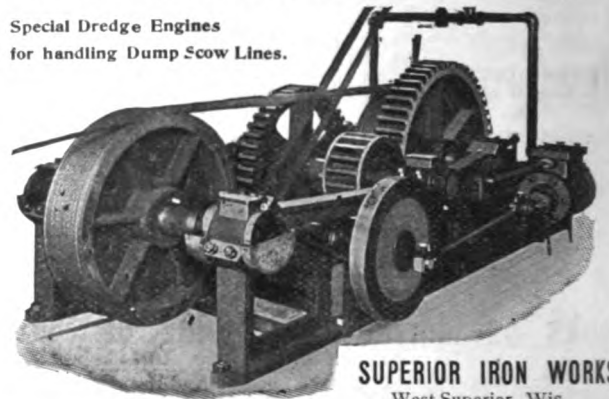
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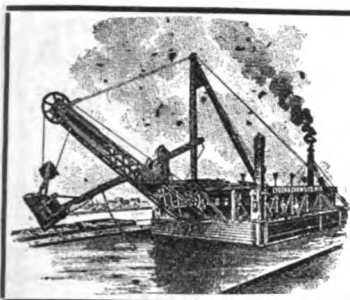
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U. S. Engineer Office, Vicksburg, Miss., July 21,
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S. BROMWELL, Capt. Engrs. Aug. 13

U. S. Engineer Office, 3232 Prytania St., New
Orleans, La., July 21, 1903. Sealed proposals will be
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Islander. (Thousand Islands—Two Views).
Frank E. Kirby at Put-in-Bay.
Lackawanna.
Mahoning.
Mahoning.
Michigan Central in Detroit River. (Winter).
Mohawk.
Montana.
W. B. Morley, wreck in Detroit River, Aug. 6, 1899.
Simon J. Murphy. (On the Ways).
Simon J. Murphy. (On the Ways—Two Views).
Simon J. Murphy, Launch. (Bow in Slip, Stern not
yet in Water).
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New Island Wanderer. (Thousand Islands).
New York. (Thousand Islands—Two Views).
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Sir William Siemens.
George Stone.
Tashmoo. (In Dewey Naval Parade, Detroit River).
Tashmoo, June 9, 1900.
Tashmoo. (Entering St. Clair Flats Ship Canal).
Tashmoo. (Landing at Star Island—Two Views).
Toronto. (Thousand Islands).
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 Lunkenheimer Co. Cincinnati.
 Penberthy Injector Co. Detroit, Mich.

INSURANCE, MARINE.

Brown & Co. Buffalo.
 Dunham, R. J. Chicago.
 Elphicke, C. W. & Co. Chicago.
 Fleming & Co., P. H. Chicago.
 Hawgood & Co., W. A. Cleveland.
 Helm & Co., D. T. Duluth.
 Hutchinson & Co. Cleveland.
 McCarthy, T. R. Montreal.
 McCurdy, Geo. L. Chicago.
 Mitchell & Co. Cleveland.
 Peck, Chas. E. & W. F. New York and Chicago.
 Richardson, W. C. Cleveland.
 Sullivan, D. & Co. Chicago.
 Weeks, F. H. New York.

IRON ORE AND PIG IRON.

Bourne-Fuller Co. Cleveland.
 Hanna, M. A. & Co. Cleveland.
 Pickands, Mather & Co. Cleveland.

LAUNCHES—STEAM, NAPHTHA, ELECTRIC.

Marine Construction & D. D. Co. New York.
 Mariner's Harbor, S. I., N. Y.
 Truscott Boat Mfg. Co. St. Joseph, Mich.
 Warrington Iron Works. Chicago.
 Willard, Chas. P. Chicago.

LIFE FLOATS.

Carley Life Float Co. New York.

LIFE PRESERVERS, LIFE BOATS, BUOYS.

Armstrong Cork Co. Pittsburgh.
 Carley Life Float Co. New York.
 Drein, Thos. & Son. Wilmington, Del.
 Kuhnsweller's Sons, D. New York.
 Lane & DeGroot. Long Island City, N. Y.
 Marine Construction & Dry Dock Co. New York.
 Mariner's Harbor, S. I., N. Y.

LIGHTS, SIDE AND SIGNAL.

Helvig, H. A. J. New York.
 Russell & Watson. Buffalo.

LOGS.

Bliss, John & Co. New York.
 Negus, T. S. & J. D. New York.
 Nicholson Ship Log Co. Cleveland.
 Walker & Sons, Thomas. Birmingham, Eng.
 Also Ship Chandlers.

LUBRICATING GRAPHITE.

Dixon Crucible Co., Joseph. Jersey City, N. J.
 United States Graphite Co. Saginaw, Mich.

LUMBER.

Martin-Barriss Co. Cleveland.
 Moran Bros. Co. Seattle, Wash.
 Shurick, F. S. New York.

MACHINISTS.

Chase Machine Co. Cleveland.
 Lockwood Mfg Co. East Boston, Mass.
 Macbeth Iron Co. Cleveland.
 Union Machine & Boiler Co. Cleveland.

MACHINE TOOLS (WOOD WORKING).

Atlantic Works, Inc. Philadelphia.

MAN-HOLES, SWING DOORS, ETC.

"Long-Arm" System Co. Cleveland.

MARINE RAILWAYS, BUILDERS OF

Crandall & Son, H. I. East Boston, Mass.

MATTRESSES, CUSHIONS, BEDDING.

Fogg, M. W. New York.

MECHANICAL DRAFT FOR BOILERS.

American Ship Building Co. Cleveland.
 Bloomsburg & Co., H. Baltimore, Md.
 Detroit Ship Building Co. Detroit.
 Sturtevant, B. F. Co. Boston.

METALLIC PACKING.

Hayden Mfg. Co., N. L. Columbus, O.
 Katzenstein, L. & Co. New York.
 U. S. Metallic Packing Co. Philadelphia.

METAL POLISH.

Bertram's Oil Polish Co. Boston.

MOTORS, GENERATORS—ELECTRIC.

Electro-Dynamic Co. Philadelphia.
 Ellwell-Parker Electric Co. Cleveland.
 General Electric Co. Schenectady, N. Y.
 "Long-Arm" System Co. Cleveland.
 Sturtevant, B. F. Co. Boston.
 Westinghouse Electric & Mfg. Co. Pittsburgh, Pa.

NAUTICAL INSTRUMENTS.

Bliss, John & Co. New York.
 Negus, T. S. & J. D. New York.
 Ritchie, E. S. & Sons. Brookline, Mass.

NAVAL ARCHITECTS.

Gaskin, Edward. Buffalo.
 Kidd, Joseph. Duluth, Minn.
 Logan, Robert. Cleveland.
 Matteson & Drake. Philadelphia.
 Mosher, Chas. D. New York.
 Newman, R. L. New York.
 Sadler, Perkins & Field. New York.
 Wood, W. J. Chicago.

OAKUM.

DeGrauw, Aymar & Co. New York.
 Stratford Oakum Co. Jersey City, N. J.

OIL FOR PAINTING.

Sipe & Co., James B. Allegheny, Pa.

OILS AND LUBRICANTS.

Dixon Crucible Co., Joseph. Jersey City, N. J.
 Standard Oil Co. Cleveland.
 United States Graphite Co. Saginaw, Mich.

PACKING.

Crane Co. Chicago.
 Hayden Mfg. Co., N. L. Columbus, O.
 Jenkins Bros. New York.
 Katzenstein, L. & Co. New York.
 New York Belting & Packing Co. New York.
 United States Metallic Packing Co. Philadelphia.

PAINTS.

Baker, Howard H. & Co. Buffalo.
 Berry Bros., Ltd. Detroit.
 Detroit Varnish Co. Detroit.
 Detroit White Lead Works. Detroit.
 Mohawk Paint & Chemical Co. Norwich, Conn.
 New Jersey Zinc Co. New York.
 Sipe & Co., James B. Allegheny, Pa.
 United States Graphite Co. Saginaw, Mich.
 Tyson-Walton Co. Cleveland.

PATENT ATTORNEYS.

Thurston & Bates. Cleveland.

PATTERN SHOP MACHINERY.

Atlantic Works, Inc. Philadelphia.

PIPE—BRASS AND COPPER, IRON PIPE SIZE.

Waterbury Brass Co. New York.

PIPE-JOINT COMPOUND.

United States Graphite Co. Saginaw, Mich.

PIPE, WROUGHT IRON.

Bourne-Fuller Co. Cleveland.
 Crane Co. Chicago.
 Macbeth Iron Co. Cleveland.

PLANING MILL MACHINERY.

Atlantic Works, Inc. Philadelphia.

PLATES—SHIP, STRUCTURAL, ETC.

Bourne-Fuller Co. Cleveland.

PLUMBING, MARINE.

Reilly Repair & Supply Co., James. New York.
 Sands, Alfred B. & Son. New York.

PNEUMATIC TOOLS.

Allen, John F. New York.
 Chicago Pneumatic Tool Co. Chicago.

POLISH FOR METALS.

Bertram's Oil Polish Co. Boston.

BUYERS' DIRECTORY OF THE MARINE TRADE.—Continued.

POWER DOORS AND HATCHES.

"Long-Arm" System Co. Cleveland.

PRESSURE REGULATORS.

Kieley & Mueller New York.
Ross Valve Co. Troy, N. Y.

PROPELLER WHEELS.

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Atlantic Works East Boston, Mass.
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Cramp, Wm. & Sons Philadelphia.
Crescent Ship Yard Co. Elizabethport, N. J.
Detroit Ship Building Co. Detroit.
Fore River Ship & Engine Co. Quincy, Mass.
Great Lakes Engineering Works Detroit.
Hyde Windlass Co. Bath, Me.
Jenks Ship Building Co. Port Huron, Mich.
Lockwood Mfg. Co. East Boston, Mass.
Macbeth Iron Co. Cleveland.
Maryland Steel Co. Sparrow's Point, Md.
Milwaukee Dry Dock Co. Milwaukee.
Moran Bros. Co. Seattle, Wash.
Needle & Levy Ship & Engine Building Co. Phila.
Newport News Ship Building Co. Newport News, Va.
Phosphor Bronze Smelting Co., Ltd. Philadelphia.
Fusey & Jones Co. Wilmington, Del.
Ridcon Iron Works San Francisco.
Roelker, H. B. New York.
Sheriffs Mfg. Co. Milwaukee.
Superior Shipbuilding Co. Superior, Wis.
Thropp & Sons Co., J. E. Trenton, N. J.
Trout, H. G. Buffalo.
United States Ship Building Co. New York.

PROJECTORS, ELECTRIC.

Elwell-Parker Electric Co. Cleveland.
General Electric Co. Schenectady, N. Y.
Westinghouse Electric & Mfg. Co. Pittsburg, Pa.

PUMPS FOR VARIOUS PURPOSES.

Blake, Geo. F. Mfg. Co. New York.
Great Lakes Engineering Works Detroit.
Kingsford Foundry & Machine Wks. Oswego, N. Y.
"Long-Arm" System Co. Cleveland.

PUNCHES, RIVETERS, SHEARS.

Allen, John F. New York.
Chicago Pneumatic Tool Co. Chicago.

REFRIGERATING APPARATUS.

Roelker, H. B. New York.

REGISTER FOR CLASSIFICATION OF VESSELS.

Great Lakes Register Cleveland.
Record of American & Foreign Shipping. New York.

RELEASING HOOKS FOR DETACHING BOATS.

Standard Automatic Releasing Hook Co. New York.

RIVETING MACHINES.

Allen, John F. New York.
Chicago Pneumatic Tool Co. Chicago.

RIVETS, STEEL, FOR SHIPS AND BOILERS.

Bourne-Fuller Co. Cleveland.

RANGES.

Russell & Watson Buffalo.

RIVETS—BRASS AND COPPER.

Waterbury Brass Co. New York.

SAFETY VALVES.

American Steam Gauge Co. Boston.
Ashton Valve Co. Boston.
Crane Co. Chicago.
Hayden Mfg. Co., N. L. Columbus, O.
Lunkenheimer Co. Cincinnati.

SAIL MAKERS.

Baker, Howard H. & Co. Buffalo.
Upson-Walton Co. Cleveland.
Wilson & Silsby Boston.

SALVAGE COMPANIES.

See Wrecking Companies.

SEARCH LIGHTS.

Elwell-Parker Electric Co. Cleveland.
General Electric Co. Schenectady, N. Y.
Westinghouse Electric & Mfg. Co. Pittsburg, Pa.

SHEARS.

See Punches, Rivets, and Shears.

SHIP AND BOILER PLATES AND SHAPES.

Bourne-Fuller Co. Cleveland.

SHIP BUILDERS.

American Ship Building Co. Cleveland.
Atlantic Works East Boston, Mass.
Bath Iron Works, Ltd. Bath, Me.
Buffalo Dry Dock Co. Buffalo.
Columbia Iron Works Port Huron.
Cramp, Wm. & Sons Philadelphia.

Craig Ship Building Co. Toledo, O.
Chicago Ship Building Co. Chicago.
Crescent Ship Yard Co. Elizabethport, N. J.
Detroit Ship Building Co. Detroit.
Fore River Ship & Engine Co. Quincy, Mass.
Great Lakes Engineering Works Detroit.
Jenks Ship Building Co. Port Huron, Mich.
Lockwood Mfg. Co. East Boston, Mass.
Manitowoc Dry Dock Co. Manitowoc, Wis.
Marine Construction & Dry Dock Co.
..... Mariner's Harbor, S. I., N. Y.
Maryland Steel Co. Sparrow's Point, Md.
Milwaukee Dry Dock Co. Milwaukee.
Moran Bros. Co. Seattle, Wash.
Needle & Levy Ship & Engine Building Co. Phila.
Newport News Ship Building Co. Newport News, Va.
Pusey & Jones Co. Wilmington, Del.
Ridcon Iron Works San Francisco.
Roach's Ship Yard Chester, Pa.
Shipowners Dry Dock Co. Chicago.
Smith & Son, Abram Algonac, Mich.
United States Ship Building Co. New York.
Warrington Iron Works Chicago.
Willard, Chas. P. & Co. Chicago.

SHIP CHANDLERS.

Baker, Howard H. & Co. Buffalo.
Moran Bros. Co. Seattle, Wash.
Reilly Repair & Supply Co., James New York.
Upson-Walton Co. Cleveland.

SHIP LANTERNS AND LAMPS.

Holvig, H. A. J. New York.
Russell & Watson Buffalo.

SHIP TIMBER.

Martin-Barriss Co. Cleveland.
Moran Bros. Co. Seattle, Wash.
Shurick, F. S. New York.

SMOOTH-ON COMPOUND, FOR REPAIRS.

Smooth-On Mfg. Co. Jersey City, N. J.

SPARS—LARGE SIZES.

Moran Bros. Co. Seattle, Wash.

STAYBOLTS, IRON OR STEEL, HOLLOW, OR, SOLID.

Falls Hollow Staybolt Co. Cuyahoga Falls, O.

STEAM VESSELS FOR SALE.

Elwell, Jas. W. & Co. New York.
Holmes, Samuel New York.
King, Rufus S. New York.
McCarthy, T. R. Montreal, Can.
Newman, R. L. New York.
Weeks, F. H. New York.

STEAMSHIP LINES, PASS. AND FREIGHT.

American Line New York.
Cleveland & Buffalo Transit Co. Cleveland.
Erie & Western Trans. Co. Buffalo.
Goodrich Trans. Co. Chicago.
International Mercantile Marine Co. Philadelphia.
Pere Marquette R. R. & S. S. Line Milwaukee.
Red Star Line New York.

STEEL CASTINGS.

Seaboard Steel Casting Co. Chester, Pa.
Macbeth Iron Co. Cleveland.

STEERING APPARATUS.

American Ship Building Co. Cleveland.
Chase Machine Co. Cleveland.
Dake Engine Co. Grand Haven, Mich.
Detroit Ship Building Co. Detroit.
Electro-Dynamic Co. Philadelphia.
Hyde Windlass Co. Bath, Me.
Jenks Ship Building Co. Port Huron, Mich.
Sheriff Mfg. Co. Milwaukee.

STOCKS, BONDS, SECURITIES.

Fahey & Co. Cleveland.

SUBMARINE DIVING APPARATUS.

Morse & Son, A. J. Boston.
Schrader's Son, A. New York.

SURVEYORS, MARINE.

Gaskin, Edward Buffalo.
Matteson & Drake Philadelphia.
Newman, R. L. New York.
Sec, Horace New York.
Wood, W. J. Chicago.

TESTS OF MATERIALS.

Hunt, Robert W. & Co. Chicago.
Pittsburg Testing Laboratory Ltd. Pittsburg.

TILING, INTERLOCKING RUBBER.

New York Belting & Packing Co. New York.

TOOLS, METAL WORKING, FOR SHIP AND ENGINE WORKS.

Allen, John F. New York.
Chicago Pneumatic Tool Co. Chicago.
Watson-Stillman Co. New York.

TOOLS, WOOD WORKING.

Atlantic Works, Inc. Philadelphia.

TOWING MACHINES.

American Ship Windlass Co. Providence, R. I.
Chase Machine Co. Cleveland.

TOWING COMPANIES.

Donnelly Salvage & Wrecking Co. Kingston, Ont.
Midland Towing & Wrecking Co., Ltd. Midland, Ont.

TRAPS, STEAM.

Kieley & Mueller New York.
Lunkenheimer Co. Cincinnati.
Sturtevant Co., B. F. Jamaica Plain, Boston.

TRUCKS.

Boston & Lockport Block Co. Boston.

TUBING, SEAMLESS.

Shelby Steel Tube Co. Pittsburg, Pa.
Waterbury Brass Co. New York.

VALVES, STEAM SPECIALTIES, ETC.

American Steam Gauge Co. Boston.
Ashton Valve Co. Boston.
Bordo, L. J. Philadelphia.
Crane Co. Chicago.
Farnan Brass Works Cleveland.
Hayden Mfg. Co., N. L. Columbus, O.
Jenkins Bros. New York.
Kieley & Mueller New York.
Lunkenheimer Co. Cincinnati.
Ross Valve Co. Troy, N. Y.

VALVES FOR WATER AND GAS.

Ross Valve Co. Troy, N. Y.

VARNISHES.

Berry Brothers, Ltd. Detroit.
Detroit Varnish Co. Detroit.
Detroit White Lead Works Detroit.
New Jersey Zinc Co. New York.
Also Ship Chandlers.

VESSEL AND FREIGHT AGENTS.

Boland, John J. Buffalo.
Brown & Co. Buffalo.
Dunham, R. J. Chicago.
Elwell, Jas. W. & Co. New York.
Elphicke, C. W. & Co. Chicago.
Fleming & Co., P. H. Chicago.
Hall & Root Buffalo.
Helm & Co., D. T. Duluth.
Hawgood & Co., W. A. Cleveland.
Holmes, Samuel New York.
Hutchinson & Co. Cleveland.
King, Rufus S. New York.
McCarthy, T. R. Montreal.
Newman, R. L. New York.
Mitchell & Co. Cleveland.
Richardson, W. C. Cleveland.
Sullivan, D. & Co. Chicago.
Weeks, F. H. New York.

VENTILATING APPARATUS FOR SHIPS.

Sturtevant, B. F. Co. Boston.

WIRE—BRASS AND COPPER.

Waterbury Brass Co. New York.

WIRE ROPE AND WIRE ROPE FITTINGS.

Baker, H. H. & Co. Buffalo.
DeGrauw, Aymar & Co. New York.
Upson-Walton Co. Cleveland.

WHISTLES, STEAM.

American Steam Gauge Co. Boston.
Ashton Valve Co. Boston.
Farnan Brass Works Cleveland.
Lunkenheimer Co. Cincinnati.

WHITE METAL—SHEETS, RODS AND WIRE.

Waterbury Brass Co. New York.

WINDLASSES.

American Ship Windlass Co. Providence, R. I.
American Ship Building Co. Cleveland.
Hyde Windlass Co. Bath, Me.
Jenks Ship Building Co. Port Huron, Mich.

WINCHES.

American Ship Windlass Co. Providence, R. I.
Hyde Windlass Co. Bath, Me.

WOOD WORKING MACHINERY.

Atlantic Works, Inc. Philadelphia.

WRECKING AND SALVAGE COMPANIES.

Donnelly Salvage & Wrecking Co. Kingston, Ont.
Midland Towing & Wrecking Co., Ltd. Midland, Ont.

YACHT AND BOAT BUILDERS.

Dreln, Thos. & Son Wilmington, Del.
Lane & DeGroot Long Island City, N. Y.
Marine Construction & Dry Dock Co. New York.
Truscott Boat Mfg. Co. St. Joseph, Mich.
Warrington Iron Works Chicago.
Willard, Chas. P. & Co. Chicago.

YAWLS.

Dreln, Thos. & Son Wilmington, Del.
Lane & DeGroot Long Island City, N. Y.

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Detroit White Lead Works	1						
							</

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Hancock.	Duluth.	

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Houghton.	Hancock.	Duluth.
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Buffalo, N. Y. Buffalo, N. Y.

LAKE SHORE & MICHIGAN SOUTHERN RY.

	Arrive	
Eastward.	from	Depart
	West	Fast.
No. 18. Southwestern Lim	.....	1:50am
No. 22, Lake Shore Lim.....	*2:15am	*2:20am
No. 20, Chi & Cleve Ex.....	*7:20am	.....
No. 28, N Y & Bost Ex.....	*7:40am	*8:00am
No. 40, Toledo & Buff Ac.....	†10:00am	†10:40am
No. 32, Fast Mail.....	*11:25am	*11:30am
No. 44, Ac via Sandusky.....	†1:40pm	.....
No. 46, Southwestern Ex.....	.....	*3:00pm
No. 106, Conneaut Accom.....	.....	†4:30pm
No. 6, Lim Fast Mail.....	*5:40pm	*5:45pm
No. 26, 20th Cent L. m.....	*7:40pm	*7:45pm
No. 10, C, N Y & B Sp.....	*7:30pm	*7:50pm
No. 16, New Eng Ex.....	*10:30pm	*10:35pm
No. 2, Day Express.....	†9:10pm	†9:25pm
No. 126, Norwalk Accom.....	†7:50am	.....
	Arrive	
	from	Depart
	East.	West.
No. 11, Southwestern Lim	*3:25am	.....
No. 7, Day Express.....	.....	†6:10am
No. 15, Bost & Chi Sp.....	*3:10am	*3:15am
No. 19, Lake Shore Lim.....	*7:15am	*7:20am
No. 23, Western Express.....	*10:30am	*10:35am
No. 33, Southern Express.....	*12:25pm	.....
No. 133, Cleve & Det Ex.....	.....	*12:45pm
No. 47, Accommodation.....	†11:20am	*3:00pm
No. 141, Sandusky Accom.....	.....	†3:10pm
No. 43, Fast Mail.....	*4:35pm	*4:40pm
No. 127, Norwalk Accom.....	.....	†5:10pm
No. 37, Pacific Express.....	*7:00pm	*7:20pm
No. 3, Fast Mail Lim.....	*10:50pm	*10:55pm
No. 115, Conneaut Accom.....	*8:30am	.....
*Daily. †Except Sunday.		
Trains No. 23, 28 and 37 run via Erie Station.		
City Ticket Office, 217 Superior St.		

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"WHILE YOU SLEEP"

**UNPARALLELED NIGHT SERVICE, NEW STEAMERS
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Finest and fastest steamers run in the interest of
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Buffalo 8 "	Cleveland 6:30 "

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W. T. NEVINS, Superintendent.

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Asst. Sec'y & Treas., Telephone, 609 Bryant, Residence. Superintendent, Telephone, 108 South, Residence.

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LARGEST TOOLS AND EQUAL TO ANY REQUIREMENT
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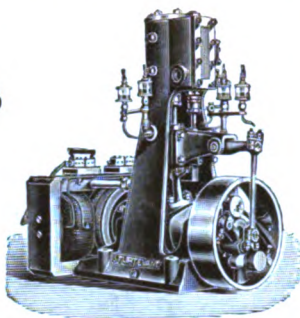
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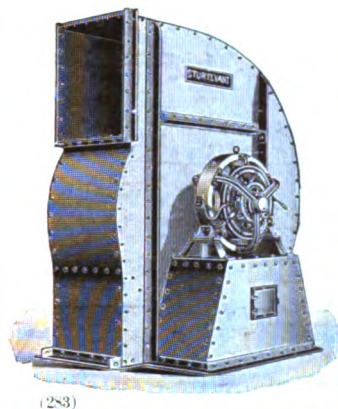
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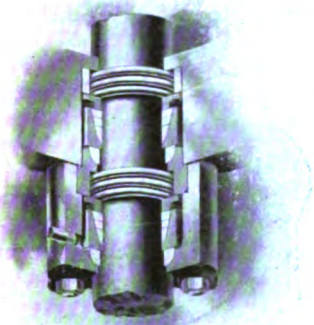
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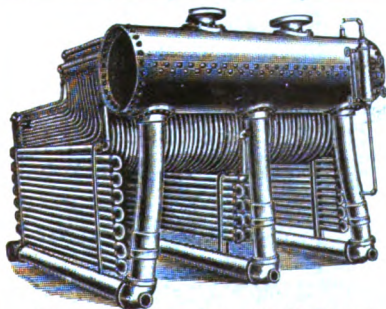
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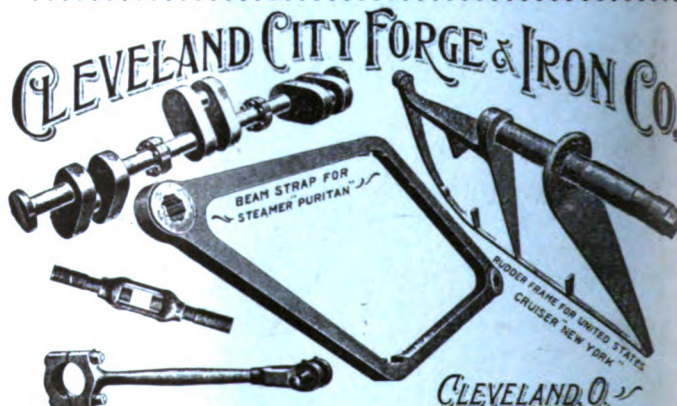
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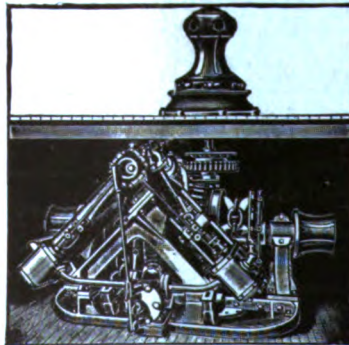
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